The Harveian Oration

ON

THE GROWTH OF TRUTH, AS ILLUSTRATED IN THE DISCOVERY OF THE CIRCULATION OF THE BLOOD.

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By WILLIAM OSLER, M.D. Oxon., F.R.C.P. Lond., F.R.S.,

REGIUS PROFESSOR OF MEDICINE IN THE UNIVERSITY OF OXFORD.

Mr. President and Fellows,—Only those of us who have had the good fortune to hold the distinguished position which by your kind grace, Sir, I hold to-day, only those of us who have delivered the Harveian Oration, can appreciate the extraordinary difficulties besetting the subject, every aspect of which has been considered, very often, too, by men who have brought to the task a combination of learning and literary skill at once the envy and the despair of their successors. But I take it, Sir, that in this Ambarvalia or commemorative festival for blessing the fruits of our great men, ordained definitely as such by him whose memory is chiefly in our minds to-day, our presence here in due order and array confers distinction upon an occasion of which the oration is but an incident. But honour worthy of such a theme should be associated with full knowledge of the conditions under which these great men lived and moved; and here comes in the real difficulty, because it is rarely possible to bring the fruits of independent critical investigation into their lives and works. Particularly hard is it for those of us who have had to live the life of the arena: our best efforts bear the stamp of the student, not of the scholar. In my own case, a deep reverence for the mighty minds of old, and a keen appreciation of the importance to our profession of a study of history, may be put in the scales against defects as to the appreciation of which I have still remaining sufficient self-detachment. The lesson of the day is the lesson of their lives. But because of the ever-increasing mental strain in this age of hurry, few of us have the leisure, fewer still, I fear, the inclination, to read it thoroughly. Only with a knowledge of the persistency with which they waged the battle for truth and the greatness of their victory, does the memory of the illustrious dead become duly precious to us. History is simply the biography of the mind of man; and our interest in history and its educational value to us is directly proportionate to the completeness of our study of the individuals through whom this mind has been manifested. To understand clearly our position in any science to day we must go back to its beginnings and trace its gradual development, following certain laws, difficult to interpret and often obscured in the brilliancy of achievements—laws which everywhere illustrate this biography, this human endeavour, working through the long ages; and particularly is this the case with that history of the organised experience of the race which we call science.

In the first place, like a living organism, Truth grows, and its gradual evolution may be traced from the tiny germ to the mature product. Never springing, Minerva-like, to full stature at once, Truth may suffer all the hazards incident to generation and gestation. Much of history is a record of the mishaps of truths which have struggled to the birth, only to die or else to wither in premature decay. Or the germ may be dormant for centuries, awaiting the fulness of time. Secondly, all scientific truth is conditioned by the state of knowledge at the time of its announcement. Thus, at the beginning of the seventeenth century the science of optics and mechanical appliances had not made possible (so far as the human mind was concerned) the existence of blood capillaries and blood corpuscles. Jenner could not have added to his inquiry a discourse on immunity; Sir William Perkin and the chemists made Koch possible; Pasteur gave the conditions that produced Lister; Davy and others furnished the preliminaries necessary for anæsthesia. Everywhere we find this invariable filiation one event following the other in orderly sequence—"Mind begets mind," as Harvey says; "opinion is the source of opinion. Democritus with his atoms, and Eudoxus with his chief good, which he placed in pleasure, impregnated Epicurus; the four elements of Empedocles, Aristotle; the doctrine of the ancient Thebans, Pythagoras and Plato; geometry, Euclid" ("De Generatione"). And, thirdly, to scientific truth alone may the *homo mensura* principle be applied, since of all mental treasures of the race it alone compels general acquiescence. That this general acquiescence, this aspect of certainty, is not reached *per saltum*, but is of slow, often of difficult, growth—marked by failures and frailties, but crowned at last with an acceptance accorded to no other product of mental activity—is illustrated by every important discovery from Copernicus to Darwin.

The growth of truth corresponds to the states of knowledge described by Plato in the *Theaetetus*—acquisition, latent possession, conscious possession. Scarcely a discovery can be named which does not present these phases in its evolution. Take, for example, one of the most recent. Long years of labour gave us a full knowledge of syphilis; centuries of acquisition added one fact to another, until we had a body of clinical and pathological knowledge of remarkable fulness. For the last quarter of a century we have had latent possession of the cause of the disease, as no one could doubt the legitimate inference from discoveries in other acute infections. The conscious possession has just been given to us. After scores of investigators had struggled in vain with the problem came Schaudinn with an instinct for truth, with a capacity to pass beyond the routine of his day, and with a vision for the whole where others had seen but in part. It is one of the tragedies of science that this brilliant investigator, with capabilities for work so phenomenal, should have been cut off at the very threshold of his career. The cancer problem, still in the stage of latent possession, awaits the advent of a man of the same type. In a hundred other less important problems, acquisition has by slow stages become latent possession; and there needs but the final touch—the crystal in the saturated solution—to give us conscious possession of the truth. But when these stages are ended there remains the final struggle for general acceptance. Locke's remark that "Truth scarce ever yet carried it by vote anywhere at its first appearance" is borne out by the history of all discoveries of the first rank. The times, however, are changing; and it is interesting to compare the cordial welcome of the pallid spirochæte with the chilly reception of the tubercle bacillus. Villemin had done his great work, Cohnheim and Salmonson had finally solved the problem of infectivity when Koch published his memorable studies. Others before him had seen the bacillus, but the conscious possession of the truth only came with his marvellous technique. Think of the struggle to secure acceptance! The seniors among us who lived through that instructive period remember well that only those who were awake when the dawn appeared assented at once to the brilliant demonstration. We are better prepared to day; and a great discovery like that of Schaudinn is immediately put to the test by experts in many lands and a verdict is given in a few months. We may have become more plastic and receptive, but I doubt it; even our generation—that great generation of the last quarter of the nineteenth century—had a practical demonstration of the slowness of the acceptation of an obvious truth in the long fight for the aseptic treatment of wounds. There may be present some who listened, as I did in October, 1873, to an introductory lecture at one of the largest of the metropolitan schools, the burden of which was the finality of surgery. The distinguished author and teacher, dwelling on the remarkable achievement of the past, concluded that the art had all but reached its limit, little recking that within a mile from where he spoke the truth for which he and thousands had been striving—now a conscious possession in the hands of Joseph Lister—would revolutionise it. With scores of surgeons here and there throughout the world this truth had been a latent possession. Wounds had healed *per primam* since Machaon's day; and there were men before Joseph Lister who had striven for cleanliness in surgical technique; but not until he appeared could a great truth become so manifest that it everywhere compelled acquiescence. Yet not without a battle—a long and grievous battle, as many of us well knew who had to contend in hospitals with the opposition of men who could not—not who would not—see the truth.

Sooner or later—insensibly, unconsciously—the iron yoke of conformity is upon our necks; and in our minds, as in

our bodies, the force of habit becomes irresistible. From our teachers and associates, from our reading, from the social atmosphere about us we catch the beliefs of the day, and they become ingrained—part of our nature. For most of us this happens in the haphazard process we call education, and it goes on just as long as we retain any mental receptivity. It was never better expressed than in the famous lines that occurred to Henry Sidgwick in his sleep:—

> "We think so because all other people think so;
> Or because—or because—after all, we do think so;
> Or because we were told so, and think we must think so;
> Or because we once thought so, and think we still think so;
> Or because, having thought so, we think we will think so."

In departing from any settled opinion or belief, the variation, the change, the break with custom may come gradually; and the way is usually prepared; but the final break is made, as a rule, by some one individual, the masterless man of Kipling's splendid allegory, who sees with his own eyes; and with an instinct or genius for truth, escapes from the routine in which his fellows live. But he often pays dearly for his boldness. Walter Bagehot tells us that the pain of a new idea is one of the greatest pains to human nature. "It is, as people say, so upsetting; it makes you think that, after all, your favourite notions may be wrong, your firmest beliefs ill-founded; it is certain that till now there was no place allotted in your mind to the new and startling inhabitant; and now that it has conquered an entrance, you do not at once see which of your old ideas it will not turn out, with which of them it can be reconciled, and with which it is at essential enmity." It is on this account that the man who expresses a new idea is very apt to be abused and ill-treated. All this is common among common men, but there is something much worse which has been illustrated over and over again in history. How eminent soever a man may become in science, he is very apt to carry with him errors which were in vogue when he was young—errors that darken his understanding and make him incapable of accepting even the most obvious truths. It is a great consolation to know that even Harvey came within the range of this law—in the matter of the lymphatic system—it is the most human touch in his career. By no single event in the history of science is the growth of truth, through the slow stages of acquisition, the briefer period of latent possession, and the for us glorious period of conscious possession, better shown than in the discovery of the circulation of the blood. You will all agree with me that a Fellow of this College must take his courage in both hands who would, in this place and before this audience, attempt to discuss any aspect of this problem. After nearly three centuries of orations the very pictures and books in this hall might be expected to cry out upon him. But I have so taken my courage, confident that in using it to illustrate certain aspects of the growth of truth I am but obeying the command of Plato, who insists that principles such as these cannot be too often or too strongly enforced. There is a younger generation, too, the members of which are never the worse for the repetition of a good story, stale though it may be in all its aspects to their elders; and then there is that larger audience to be considered to which the season is never inappropriate to speak a word.

The sixteenth century, drawing to a close, had been a period of acquisition unequalled in history. Brooding over the face of the waters of mediævalism, the spirit of the Renaissance brought forth a science of the world and of man which practically created a new heaven and a new earth and the truths announced by Copernicus and Galileo far transcended

> "the searching schoolmen's view
> And half had staggered that stout Stagyrite."

Among other things, it had given to medicine a new spirit, a new anatomy, and a new chemistry. In the latter part of the fifteenth century Hippocrates and Galen came to their own again. A wave of enthusiasm for the fathers in medicine swept over the profession, and for at least two generations the best energies of its best minds were devoted to the study of their writings. How numerous and important is that remarkable group of men, the medical humanists of the Renaissance, we may judge by a glance at Bayle's "Biographie Médicale," in which the lives are arranged in chronological order. From Garbo of Bologna, surnamed the expositor, to Rabelais, more than 150 biographies and bibliographies are given, and at least one half of these men had either translated or edited works of the Greek physicians. Of our founder, one of the most distinguished of the group, and of his influence in reviving the study of Galen and so indirectly of his influence upon Harvey, Dr. Payne's story still lingers in our memories. Leonicenus, Linacre, Gonthier, Monti, Koch, Camerarius, Caius, Fuchs, Zerbi, Cornarius, and men of their stamp not only swept away Arabian impurities from the medicine of the day, but they revived Greek ideals and introduced scientific methods. The great practical acquisition of the century was a new anatomy. Vesalius and his followers gave for the first time an accurate account of the structure of the human body, and while thus enlarging and correcting the work of Galen, contributed to weaken the almost divine authority with which he dominated the schools. Nearly another century passed before chemistry, in the hands of Boyle and others, reached its modern phase, but the work of Paracelsus, based on that of the "pious Spagyrist," Basil Valentine, by showing its possibilities, had directed men's minds strongly to the new science. Of the three, the new spirit alone was essential, since it established the intellectual and moral freedom by which the fetters of dogma, authority, and scholasticism were for ever loosened from the minds of men.

Into this world, we may say, stepped a young Folkestone lad, when, on the last day of May, 1593, he matriculated at Cambridge. Harvey's education may be traced without difficulty, because the influences which shaped his studies were those which had for a century prevailed in the profession of this country. We do not know the reason for the selection of Caius College, which, so far as I can gather, had no special connexion with the Canterbury school. Perhaps it was chosen because of the advice of the family physician, or of a friend, or of his rector, or else his father may have known Caius, or the foundation may already have become famous as a resort for those about to "enter on the physic line." Or, quite as likely, as we so often find in our experience, some trivial incident may have turned his thoughts towards medicine. When he came up in 1593 there were those of middle age who could tell racy stories of Caius, the co-founder of the college, against whose iron rule they had rebelled. "Charged not only with a show of a perverse stomach to the professors of the Gospel, but with Atheism," the last days of Caius's noble life were embittered by strife and misunderstanding. Doubtless the generous souls among them had long since learned to realise the greatness of his character and were content to leave "the heat of his faith to God's sole judgment, and the light of his good works to men's imitation," with which words, half a century later, the inimitable Fuller concludes a short sketch of his life. I like to think that perhaps one of these very rebels, noting the studious and inquisitive nature of Harvey, had put into the lad's hand the little tractate, *De libris propriis*, from which to glean a knowledge of the life and works of their great benefactor.

The contemplation of such a career as that of Caius could not but inspire with enthusiasm any young man. No one in the profession in England had before that time reached a position which I may describe as European. An enthusiastic student and the friend of all the great scholars of the day; a learned commentator on the works of the Fathers; the first English student in clinical medicine; a successful teacher and practitioner; a keen naturalist; a liberal patron of learning and letters; a tender and sympathetic friend—Johannes Caius is one of the great figures in our history. Nor need I dwell, before this audience, on his devotion to our interests, other than to say that the memory of no Fellow on our roll should be more precious to us. Four years hence, on Oct. 6th, will occur the quatercentenary of his birth. As well in love as in gratitude, we could celebrate it in no more appropriate manner, and in none that would touch his spirit more closely, than by the issue of a fine edition of his principal works (including the MS. annals of the College). For the preparation of this there are those among us well fitted, not less by veneration for his memory than by the possession of that critical scholarship which he valued so highly.

When Harvey set out on the grand tour Italy was still the *mater gloriosa studiorum*, to which one hundred years earlier, so tradition says, Linacre on leaving had erected an altar. The glamour of the ideals of the Renaissance had faded somewhat since the days when John Free, an Oxford man, had made the ancient learning his own; and had so far bettered the instruction of his masters that he was welcomed as a teacher in Padua, Ferrara, and Florence. In a measure, too, the national glory had departed, dimmed

amid the strife and warfare which had cost the old republics their independence. Many years earlier Fracastorius, one of our medical poets, had sung of her decadence:

> "To what estate, O wretched Italy,
> Has civil strife reduc'd and moulder'd Thee!
> Where now are all thy ancient glories hurl'd?
> Where is thy boasted Empire of the world?
> What nook in Thee from barbarous Rage is freed
> And has not seen thy captive children bleed?"[1]

And matters had not improved but had grown worse. In the sixteenth century Italian influence had sunk deeply into the social, professional, and commercial life of England—more deeply, indeed, than we appreciate[2]; and it was not for a generation or two later that the candlesticks were removed from the Cisalpine towns to Montpellier, Paris, and Leyden. In 1593 a well-to-do young Englishman who wished to study medicine thoroughly went to North Italy and most naturally to Padua—"fair Padua, nursery of the arts"—whose close affiliations with us may be gathered from the fact that, of universities next to Oxford and Cambridge, she has given us more presidents than any other. In the years that had passed since Vesalius had retired in disgust, the fame of its anatomical school had been well maintained by Fallopius, Columbus, and Fabricius, worthy successors of the great master. Of each may be said what Douglas says of the first named: "*In docendo maxime methodicus, in medendo felicissimus, in secando expertissimus.*" While the story of Harvey's student life can never be told as we could wish, we know enough to enable us to understand the influences which moulded his career. In Fabricius he found a man to make his life-model. To the enthusiastic teacher and investigator were added those other qualities so attractive to the youthful mind, generous sympathies and a keen sense of the wider responsibilities of his position, as shown in building, at his own expense, a new anatomical theatre for the University. Wide as was the range of his master's studies, embracing not alone anatomy but medicine and surgery, the contributions by which he is most distinguished are upon subjects in which Harvey himself subsequently made an undying reputation. The activity of his literary life did not begin until he had been teaching nearly 40 years, and it is a fact of the highest significance that, corresponding to the very period of Harvey's stay in Padua, Fabricius must have been deep in the study of embryology and of the anatomy of the vascular system. His great work on generation was the model on which Harvey based his own, in some ways more accurate studies—studies in which, as my colleague, Professor Brooks of the Johns Hopkins University, has pointed out, he has forestalled Wolf and von Baer.

The work of Fabricius which really concerns us here is the "De Venarum Ostiolis." Others before him had seen and described the valves of the veins, Carolus, one of the great Stephani, Sylvius, and Paul Sarpi. But an abler hand in this work has dealt with the subject and has left us a monograph which for completeness and for accuracy and beauty of illustration has scarcely its equal in anatomical literature. Compare Plate VII., for example, with the illustrations of the same structures in the Bidloo or the Cowper "Anatomy," published nearly one hundred years later; and we can appreciate the advantages which Harvey must have enjoyed in working with such a master. Indeed, it is not too far-fetched to imagine him, scalpel in hand, making some of the very dissections from which these wonderful drawings were taken. But here comes in the mystery. How Fabricius, a man who did such work—how a teacher of such wide learning and such remarkable powers of observation, could have been so blinded as to overlook the truth which was tumbling out, so to speak, at his feet, is to us incomprehensible. But his eyes were sealed, and to him, as to his greater predecessors in the chair, clear vision was denied. The dead hand of the great Pergamite lay heavy on all thought, and Descartes had not yet changed the beginning of philosophy from wonder to doubt. Not without a feeling of pity do we read of the hopeless struggle of these great men to escape from slavish submission to authority. But it is not for us in these light days to gauge the depth of the sacred veneration with which they regarded the Fathers. Their mental attitude is expressed in a well-known poem of Browning's:—

> "those divine men of old time
> Have reached, thou sayest well, each at one point
> The outside verge that rounds our faculty,
> And where they reached who can do more than reach?"

[1] Syphilis: Englished by E. Tate, 1686.
[2] Italian Renaissance in England, Einstein. Macmillan. 1902.

Willing to correct observations or to extend anatomy by careful dissection, it was too much to expect from them either a new interpretation of the old facts or a knowledge of the new method by which those facts could be correctly interpreted. The ingenious explanation which Fabricius gave of the use of the valves of the veins—to serve as dams or checks to the flow of the blood, so that it would not irrigate too rapidly and overflow the peripheral vessels to the deprivation of the upper parts of the limbs—shows how the old physiology dominated the most distinguished teacher of the time in the most distinguished school of Europe. This may have been the very suggestion to his pupil of the more excellent way. Was it while listening to this ingenious explanation of his master that, in a moment of abstraction—dimly dreaming, perhaps, of an English home far away and long forsaken—there came to Harvey a heaven-sent moment, a sudden inspiration, a passing doubt nursed for long in silence, which ultimately grew into the great truth of 1616?

The works of Vesalius, of Fallopius, and of Fabricius effected a revolution in anatomy but there was not at the close of the sixteenth century a new physiology. Though he had lost an anatomical throne Galen ruled absolutely in all conceptions of the functions of the body, and in no department more serenely than in that relating to the heart, the blood and its movements. Upon his views I need not dwell further than to remind you that he regarded the liver as the source of the blood, of which there were two kinds, the one in the veins, the other in the arteries, both kinds in ceaseless ebb and flow, the only communication between these closed systems being through pores in the ventricular septum. He knew the lesser circulation but thought it only for the nutrition of the lungs. The heart was a lamp which is furnished with oil by the blood and with air from the lungs. Practically until the middle of the seventeenth century Galen's physiology ruled the schools, and yet for years the profession had been in latent possession of a knowledge of the circulation. Indeed, a good case has been made out for Hippocrates, in whose works occur some remarkably suggestive sentences.[3] In the sixteenth century the lesser circulation was described with admirable fulness by Servetus and by Columbus, and both Sarpi and Caesalpinus had Hippocratic glimmerings of the greater circulation. These men, with others doubtless, were in latent possession of the truth. But every one of them saw darkly through Galenical glasses, and theirs was the hard but the common lot never to reach such conscious possession as everywhere to make men acquiesce. One must have the disinterestedness of the dead to deal with a problem about which controversy has raged and in which national issues have been allowed to blur the brightness of an image which would be clear as day to those with eyes to see. Nor would I refer to a matter long since settled by those best competent to judge had not the well-known work of Luciani, the distinguished professor of physiology at Rome, appeared recently in German dress, edited by Professor Verworn, and spread broadcast views to which, with a chauvinism unworthy of their history, our Italian brethren still adhere. It has been well said "that he alone discovers who proves," and in the matter of the circulation of the blood this was reserved for the pupil of Fabricius. Skipping many arduous years we next meet him as Lumleian lecturer to the College.

The really notable years in the annals of medicine are not very numerous. We have a calendar filled with glorious names, but among the saints of science, if we know an era it is as much as can be expected—perhaps because such men are less identified with achievements than representative of the times in which they lived. With many of our greatest names we cannot associate any fixed dates. The Grecians who made Hippocrates possible live in memory with some theory, or a small point in anatomy, or in regard to the place of their birth; while the "floruit" cannot always be fixed with accuracy. Hippocrates himself, Erasistratus, Galen, and Araetius have no days in our calendar. We keep no festival in their honour as the churches do those of St. Jerome and St. Chrysostom. It is not until after the Renaissance that certain years (*anni mirabiles*) stand out in bold relief as connected with memorable discoveries, or with the publication of revolutionary works. Nevertheless, only a few in each century; even the sixteenth, so rich in discoveries, has not more than five or six such years, and not one of them is connected with work done in this country. As to the seventeenth century, it is hard

[3] Willis's Harvey, pp. 21-22.

to name four made memorable by the announcement of great discoveries or the publication of famous works; in the eighteenth century not three, while in the century just completed, though it is replete with extraordinary discoveries, one is hard pressed to name half a dozen years which flash into memory as made ever memorable by great achievements. Of the three most important, anæsthesia, sanitation, and antiseptic surgery, only of the first can the date be fixed, 1846, and that for its practical application. For the other two discoveries, who will settle upon the year in which the greatest advance was made, or one which could be selected for an anniversary in our calendar?

There is one *dies mirabilis* in the history of the College—in the history, indeed, of the medical profession of this country, and the circumstances which made it memorable are well known to us. At 10 o'clock on a bright spring morning, April 17th, 1616, an unusually large company was attracted to the new anatomical theatre of the Physicians' College, Amen-street. The second Lumleian lecture of the annual course, given that year by a new man, had drawn a larger gathering than usual, due in part to the brilliancy of the demonstration on the previous day, but also, it may be, because rumours had spread abroad about strange views to be propounded by the lecturer. I do not know if at the College the same stringent rules as to compulsory attendance prevailed as at the Barber Surgeons' Hall. Doubtless not; but the President, and Censors, and Fellows would be there in due array; and with the help of the picture of "The Anatomy Lecture by Bannister," which is in the Hunterian collection, Glasgow, and a photograph of which Dr. Payne has recently put in our library, we can bring to mind this memorable occasion. We see the "Anatomy," one of the six annually handed over to the College, on the table, the prosector standing by the skeleton near at hand, and very probably on the wall the very *Tabulæ* of dissection of the arteries, veins, and nerves that hang above us to-day. But the centre of attention is the lecturer—a small dark man, wand in hand, with black piercing eyes, a quick vivacious manner, and with an ease and grace in demonstrating which bespeaks the mastery of a subject studied for twenty years with a devotion that we can describe as Hunterian. A Fellow of nine years' standing, there was still the salt of youth in William Harvey when, not as we may suppose, without some trepidation, he faced his auditors on this second day—a not uncritical audience, including many men well versed in the knowledge of the time and many who had heard all the best lecturers of Europe.

The President, Henry Atkins, after whose name in our Register stands the mysterious word "Corb," had already had his full share of official lectures, less burdensome 300 years ago than now. Let us hope the lecture of the previous day had whetted his somewhat jaded appetite. The Censors of the year formed an interesting group: John Argent, a Cambridge man, a "great prop of the College," and often President, of whom but little seems known; Richard Palmer, also of Cambridge, and remembered now only for his connexion with Prince Henry's typhoid fever, as Dr. Norman Moore has told us; Mathew Gwinne of Oxford, first professor of physic at Gresham College, and a playwright of some note in his day; and Theodore Goulston of Merton College, one of our great benefactors and for 267 years past and gone purveyor-in-chief of reputation to the younger Fellows of the College. Mayerne would be there, not yet a Fellow, but happy in his escape from the Paris Faculty; still dusty with conflict, he would scent the battle afar in the revolutionary statements which he heard. Meverell, fresh from incorporation at Cambridge, also not yet a Fellow; Moundeford, often President, whose little book "Vir Bonus" sets forth his life. Paddy, a noteworthy benefactor, a keen student, still gratefully remembered at Oxford, would have strolled in with his old friend Gwinne; Baldwin Hamey the elder, also a benefactor, would be there, and perhaps he had brought his more interesting son, then preparing to enter Leyden, whose memory should be ever green among us. Let us hope Thomas Winston, probably an old fellow-student at Padua, and later appointed professor of physic at Gresham College, was absent, as we can then be more charitable towards the sins of omission in his work on "Anatomy" published after his death, which, so far as I can read, contrary to the statement of Munk (Roll of the College) contains no word of the new doctrine. As an old Paduan, and fresh from its anatomical school, the younger Craige would not be absent. Fludd, the Rosicrucian, of course, was present; attracted, perhaps, by rumours of anti-Galenical doctrines which had served to keep him out of the College; nor would he be likely to be absent at the festival of one whom he calls his "physicall and theosophicall patron." And certainly on such an occasion that able Aberdonian, Alexander Reid, would be there, whose Σωματογραφία had just appeared,[4] with an extraordinarily full account of the vascular system. Reid was a good anatomist, one of our most distinguished medico-chirurgical fellows, and a liberal benefactor. If, as has been stated, he was not a convert on account of his age, it was on account of his youth, for the Harveian doctrine, if in meagre form, is to be found in the later edition (fifth) of his "Manual." But we would miss Lodge, the poet, "cried-up to the last for physic," as he had recently started for the continent. And we may be sure that Harvey's old fellow-students at Padua—Fortescue, Fox, Willoughby, Mounsell, and Darcy—would honour their friend and colleague with their presence; and Edward Lister, also a fellow-Paduan, the first of his name in a family which has given three other members to our profession—two distinguished and one immortal. It was not a large gathering, as the Fellows, members, licentiates, and candidates numbered only about forty; but as the lecture was a great event in the community, there would be present many interested and intelligent laymen, of the type of Digby, and Ashmole, and Pepys—the "curious," as they were called, for whom throughout the seventeenth century the anatomy lecture equalled in attraction the play. Delivered in Latin, and interspersed here and there with English words and illustrations, there were probably more who saw than who comprehended, as Sir Thomas Browne indicated to his son Edward when he lectured at Chirurgeons' Hall.

It is a fortunate, and perhaps an unique, circumstance in bibliography that the manuscript of this course of lectures should have been preserved and that we should be able to follow step by step the demonstration—a long and formidable procedure, as the whole anatomy of the thoracic organs was discussed. I dare say there was a prolonged break between the morning and the afternoon lecture "for a fine dinner," as Pepys described, when, on Feb. 27th, 1663, he went with Harvey's pupil, Scarborough, to Chirurgeons' Hall and was used with "extraordinary great respect." Towards the close, after discussing, in novel and modern terms, the structure and action of the heart, Harvey summed up in a few sentences the conclusion of the matter. They stand as follows in the "Prelectiones" (published by the College in 1886):—

> W. H. constat per fabricam cordis sanguinem
> per pulmones in Aortam perpetuo
> transferri as by two clacks of a
> water bellows to rayse water
> constat per ligaturam transitum sanguinis
> ab arteriis ad venas
> unde perpetuum sanguinis motum
> in circulo fieri pulsu cordis.

Probably few in the lecture hall appreciated the full meaning of these words, which to some must have seemed a blot on the whole performance; while others, perhaps, all with the feelings of the fishes after St. Anthony's well-known sermon:

> Much delighted were they,
> But preferred the old way,

returned to their homes wondering what he would say on the morrow when the "divine banquet of the brain" was to be spread before them. One thing was certain—the lecture gave evidence of a skilled anatomist of remarkably wide experience and well versed in literature from Aristotle to Fabricius. While Harvey could agree with John Hunter, who states in an MS. introductory lecture in the College library—"I deliver nothing I have not seen and observed myself,"—he could not add with him, "I am not a reader of books." Nearly one hundred references to some twenty authors occur in the manuscript of the thorax, or, as he calls it, the "parlour" lecture. It is a great pity that we have no contemporary account of the impression on such men as Mayerne or Reid of the new doctrines, for which we have the author's statement that they were taught annually and elaborated. So far as I know there is no reference to show that the lectures had any immediate influence in the profession, or indeed that the subject matter ever got beyond the circle of the College. We are not without a first-hand account by the author of his reception: "These views as usual pleased some more, others less; some chid and calumniated me, and laid it to me as a

[4] Copy in Bodleian Library.

crime that I had dared to depart from the precepts and opinions of all anatomists; others desired further explanation of the novelties."

It is difficult for us to realise the mental attitude of the men who listened year by year as the turn of the "Parlour Lecture" came. Their opinions, no less firmly held than is our positive knowledge, did not get much beyond: "The great dictator Hippocrates puts us in mind of it, Galen has a thousand times inculcated the same, the prince of the Arabian tribe, Avicen, has set his seal unto it." This expresses their mental state, and such a heresy as a general circulation could scarcely be appreciated; and in a man of such good parts as Harvey would in pity be condoned, just as we overlook the mild intellectual vagaries of our friends.

Bootless to ask, impossible to answer, is the question why Harvey delayed for 12 years the publication of his views. He seems to have belonged to that interesting type of man, not uncommon in every age, who knows too much to write. It is not a little remarkable that this reticence of learning has been a strong mental feature in some of the greatest of discoverers. Perhaps it was the motive of Copernicus, who so dreaded the prejudices of mankind that for 30 years he is said to have detained in his closet the "Treatise of Revolutions." From what Harvey says, very much the same reasons restrained the publication of his work. To the lesser circulation, with the authority of Galen and Columbus to support it, men "will give their adhesion," but the general circulation "is of so novel and unheard-of character that I not only fear injury to myself from the envy of a few, but I tremble lest I have mankind at large for my enemies, so much doth wont and custom, that has become as another nature, and doctrine once sown and that hath struck deep root and rested from antiquity, influence all men." He felt, as he says to Riolan, that it was in some sort criminal to call in question doctrines that had descended through a long succession of ages and carry the authority of the ancients; but he appealed unto Nature that bowed to no antiquity and was of still higher authority than the ancients. Men have been for years in conscious possession of some of the greatest of truths before venturing to publish them. Napier spent 20 years developing the theory of logarithms, and Bacon kept the "Novum Organum" by him for 12 years, and year by year touched it up—indeed, Rowley states that he saw 12 copies. Two other famous discoveries by Englishmen have the same curious history—the two which can alone be said to be greater than the demonstration of the circulation of the blood. Zachariah Wood speaks of Harvey as the surmiser of the little world, to distinguish him from another Englishman who first went about the greater world. But a greater than both—Isaac Newton—had grasped the secret of a cosmic circulation, and brooded in silence over the motion of the spheres for more than twenty years before publishing the "Principia." Between the writing of the rough sketch in 1842 and the appearance of the "Origin of Species" 17 years elapsed; and from the date of the journal notes, 1836, in which we have the first intimation of Darwin's theory, more than twenty years. In Harvey's case this intellectual reticence, this hesitation "to quit the peaceful haven," as he says, has cost us dear. Only a happy accident gave us the "De Generatione," and the College can never be too grateful to Sir George Ent for that Christmas visit, 1650, so graphically described, and to which we owe one of the masterpieces of English medicine. How many seventeenth-century treatises we could have spared to have had the "Practice of Medicine conformable to his Thesis of the Circulation of the Blood"! How instructive his prospective "Medical Observations" would have been we can gather from the remarkable series of cases scattered through the manuscript notes and his published writings. His "treatise apart" on "Eventilation" or "Respiration"; the "Medical Anatomy" or "Anatomy in its Application to Medicine," as he says, "I also intend putting to press"; the work "from observations in my possession" on "Organs of Motion in Animals"—all of these, with the work on "Generation in Insects," and others mentioned by Dr. Merrett,[5] the then library keeper, 1667, were probably dispersed when those sons of Belial ransacked his chambers at Whitehall.

"Still the die is cast, and my trust is in the love of truth and the candour that inheres in cultivated minds." With these words he consoles himself, knowing from experience that the publication of even a portion of the work, as in one place he calls the little book, would raise a tempest. Zachariah Wood in the preface to the English edition, 1673, expresses what many of his contemporaries must have felt: "Truly a bold man indeed, O disturber of the quiet of physicians! O seditious citizen of the Physical Commonwealth! who first of all durst oppose an opinion conformed for so many ages by the consent of all." De Bach of Amsterdam describes the dilemma in which teachers found themselves: "This new thing I did examine, which the first entrance did seem very easily to be refuted, but being weighed in a just balance, and having added to reason my own eyesight it was found inexpugnable, nay (the very prick of truth enforcing) to be embraced with both arms. What shall I doe? Must Hippocrates be left, Galen slighted? No, if we follow the truth senced with reason and our sense, we are still Hippocrates his, we are still Galens" (English edition, 1653).

The history of the next 30 years illustrates the truth of Locke's dictum in the struggle for acceptance. Not the least interesting part of the story, it should be told at greater length and with more detail than it has yet received—more than I am able to give it. That the repeated demonstrations, aided by the strong personal influence of the man, brought the College, as a body, to the new views it witnessed rather by the esteem and affection the Fellows bore to him than by any direct evidence. The appearance of the book in 1628 made no great stir; it was not a literary sensation—a not uncommon fate of epoch-making works, the authors of which are too far ahead of their contemporaries to be appreciated. The same event happened to Newton's "Principia"; as Sir William Petty remarks, "I have not met with one man that put an extraordinary value on the book."

Among Englishmen, Primrose alone, brought up among the strictest sect of the Galenists, and at the time not a Fellow, wrote a criticism from the old standpoint (1632), and remained unconvinced 12 years later, as his controversy with Regius shows. And only one special treatise in favour of the circulation was written in England—that of Sir George Ent, a pupil and friend of Harvey, who wrote (1641) specially against Parisanus, a Venetian, a foeman quite unworthy of his quill. In the universities the new doctrine rapidly gained acceptance—in Cambridge through the influence of Glisson, while in part to Harvey's work and influence may be attributed that only too brief but golden renaissance of science at Oxford. A little incident mentioned in the autobiographical notes of the celebrated Wallis shows how the subject was taken up quite early in the universities: "And I took into it the speculative part of physick and anatomy as parts of natural philosophy and, as Dr. Glisson has since told me, I was the first of his sons who (in a public disputation) maintained the circulation of the blood, which was then a new doctrine, though I had no design of practising physick." This was in the early "thirties." But the older views were very hard to displace and as late as 1651 we find such intelligent members of the "invisible college" as Boyle and Petty carrying out experiments together in Ireland to satisfy themselves as to the truth of the circulation of the blood.

It took much longer for the new views to reach the textbooks of the day. From no work of the period does one get a better idea of the current anatomical and physiological teaching in London than from Crooke's "Body of Man" (1615 and 1631). Collected out of Vesalius, Plantinus, Platerius, Laurentius, Valverda, Bauchinus, and others, it is an epitome of their opinions, with the comments of the professor who read the anatomy lecture to the Company of the Barber-Surgeons. In the preface to the first edition he speaks of the contentment and profit he had received from Dr. Davies's Lumleian Lectures at the College of Physicians. There is no indication in the second edition that he had benefited by the instruction of Dr. Davies's successor. Galen is followed implicitly, with here and there minor deviations. The views of Columbus on the lesser circulation are mentioned only to be dismissed as superfluous and erroneous. The Gresham Professor of the day, Dr. Winston, makes no mention of the new doctrine in his "Anatomy Lectures" which were published after his death, 1651, and are of special interest as showing that at so late a date a work could be issued with the Galenical physiology unchanged. In Alexander Reid's "Manual," the popular text-book of the day, the Harveian views are given in part in the fifth

[5] Munk: Roll of the College, vol. i., p. 132.

edition, in which, as he says in the preface, "the book of the breast" is altogether new—an item of no little interest, since he was a man advanced in years, and, as he says, "the hourglass hasteneth, and but a few sands remain unrun." Highmore, the distinguished Dorsetshire anatomist, and a pupil of Harvey, in his well-known "Anatomy" published in 1651, gives the ablest exposition of his master's views that had appeared in any systematic work of the period, and he urges his readers to study the "De Motu Cordis" as "fontum ipsum" from which to get clearer knowledge. He quotes an appropriate motto for the period—*laudamus veteres: sed nostris utimur annis*. But even so late as 1671 the old views were maintained in the English edition of Riolan. And yet the knowledge of Harvey's views must have spread broadcast, not only in the profession, but in that large outside circle of distinguished men who felt the new spirit of science working in their veins. From converse or from the Lumleian lectures, which no doubt he often attended, Kenelm Digby must have had the information about Harvey's views on generation, as at the date of the issue of his "Two Treatises," 1644, they had not been published anywhere. While he knew well the motion of the blood as expounded by Harvey, and having, in making his great antidote, studied the action of the viper's heart, Digby, like Descartes, could not emancipate himself from the old views, as shown in the following passage: "But if you desire to follow the blood all along every steppe, in its progresse from the hart round about the body, till it returne back againe to its center, Doctor Harvey, who most acutely teacheth this doctrine, must be your guide. He will show you how it issueth from the hart by the arteries; from whence it goeth on warming the flesh, untill it arrive to some of the extremities of the body: and by then it is growp so coole (by long absence from the fountaine of its heate; and by evaporating its owne stocke of spirits, without any new supply) that it hath need of being warmed anew; it findeth itself returned backe againe to the hart, and is there heated againe, which returne is made by the veines, as its going forwardes, is performed only by the arteries." Sir William Temple well expresses the attitude of mind of the intellectual Philistine of the time, who looked for immediate results. Speaking of the work of Harvey and of Copernicus he says: "Whether either of these be modern discoveries or derived from old foundations is disputed; nay, it is so too, whether they are true or no; for though reason may seem to favour them more than the contrary opinions, yet sense can hardly allow them, and to satisfy mankind both these must concur. But if they are true, yet these two great discoveries have made no change in the conclusions of Astronomy nor in the practice of Physic, and so have been but little use to the world, though, perhaps, of much honour to the authors."[6] It is pleasant to notice that our old friend, Sir Thomas Browne, with his love of paradox, declared that he preferred the circulation of the blood to the discovery of America.

Of the reception of Harvey's views in Holland and Germany there is nothing to add to the admirable account given by Willis. The early and strenuous advocacy of Descartes must have influenced the Dutch physicians; but in this, as in so many other things, the infection of his early years proved too powerful, and he could not get rid of the "ancient spirits." Of the discovery of the circulation he says[7] it is "la plus belle et la plus utile que l'on pût faire en médecine." "Tout à faite contraire au sein touchant la mouvement du coeur," which he held to be due to an ebullition of the spirits—a sort of ferment (*espèce de levain*) existing in it. Much more actively discussed in Holland than elsewhere, the writings of Drake, Walaeus, Regius, Plempius, Sylvius, de Bach, Conringius, T. Bartholini (the Dane), and others threshed out the whole question very thoroughly, and their views, with those of Hoffman, Slegel, and others are referred to by Willis and given in greater detail by Riolan.[8] In the oft-quoted statement that Harvey, "conquering envy, hath established a new doctrine in his lifetime," Hobbes was right so far as England and Holland are concerned. But it was far otherwise in France, where it met with a bitter and a protracted hostility. The Medical School of the University of Paris, at the time one of the best organised and most important in Europe, declined to accept the circulation of the blood during his lifetime and for some years after his death. The history of the period is pictured for us in vivid colours in that *journal intime* which Gui Patin kept up with his friends, Spohn and Falkconet of Lyons and the Belins (*père et fils*). With all his faults, particularly his scandalous lack of charity, one cannot but feel the keenest sympathy with this dear old man. Devoted to his saints, Hippocrates and Galen, Fernel, and Duret, and to his teachers, Piètre and Riolan, to him the circulation of the blood was never more than an ingenious paradox. To such a lover of books and of good literature everything can be forgiven, and in his letters we follow with deepest interest his vigorous campaign against his dear enemies, the *Cuisiniers Arabesques*, who had enslaved people and physicians alike, the hæmophobies, the chemists, the astrologers, and the *stibiate*, as he calls it, the *Stygiate* group. To him the Koran was less dangerous than the works of Paracelsus, the appearance of the new Geneva edition of which he deeply deplores. Reverence for Galen and friendship with Riolan, rather than any deep interest in the question, inspired his opposition. To him the new doctrine was ridiculous and it was he who called the partisans of it *circulateurs* in allusion to the Latin word, circulator, meaning charlatan. In 1652 he writes to Spohn that the question is still open whether the blood passes through the septum of the heart or through the lungs. In 1659 he promises to send him a work of Vinean against the circulation.[9] More extraordinary still is the fact that as late as 1670, 12 years after Harvey's death, the thesis of one Cordelle, a bachelor of medicine, publicly discussed the circulation of the blood, and Gui Patin, who presided, decided in the negative. The fiction of an ingenious narrator, *le doux songe* of Harvey, are the terms in which he speaks of it. The whole passage is worth quoting as possibly the last public denouncement of what seemed a rank heresy to the old Galenists: "Supposer que le sang se meut toujours circulairement, que de la veine cava ascendante il tombe dans l'oreillette droite du cœur, que de là il aille traverser toute la substance du poumon pour retomber de là dans l'oreillette gauche en passant par la veine pulmonaire, et qu'enfin de là il soit projeté dans l'aorte et toutes les artères qui le feront passer dans les veines, et dans le cœur, lui faisant par ce moyen suivre un circuit, voilà le doux songe de Harvey, la fiction d'un narrateur ingénieux, mais nullement prouvée par l'évidence. La circulation du sang, son transport circulaire par les vaisseaux, c'est l'enfantement d'un esprit oisif, un vrai nuage qu'embrassent les Ixions pour procréer les Centaurs et les monstres."[10] As I said, we can forgive a great deal to the man who has left us such a picture of seventeenth-century life, drawn, all unconsciously, with a master hand, and through the mists of prejudice and hate we can recognise the good sense which had the courage to protest against the *forfanterie Arabesque et bézoardesque* in much of the therapeutics of the day.

Though a professor in the Paris Faculty and a brilliant lecturer, Patin at that time did not occupy such a distinguished position, nor was his opposition of such importance, as that of Riolan—"John Riolan, the Son, the most experienced Physician in the Universitie of Paris, the Prince of Dissection of Bodies, and the King's professor, and Dean of Anatomie and of the knowledge of simples, chief physician to the queen-mother of Louis XIII."—as he is quaintly, but very truly, described by Harvey.[11] Brought up by his father to regard Hippocrates and Galen as the sources of all wisdom, the intensity of his zeal increased with his years until at last "to see the physic of Galen kept in good repair" became the passion of his life. The deep pity of it all is that such mental blindness should have stricken a really great man, for he was a brilliant anatomist and teacher, the author of the best anatomical text-book of its day, a man of affairs, profoundly versed in literature, a successful practitioner, and for years the head of the profession in France. The opposition of such a man was serious, and naturally had a profound influence. Not content with the comparatively brief statement in "Encheiridion," 1648, Riolan published in England the following year his "Opuscula Anatomica nova," one very large section of which is taken up with the problem of circulation. It was this probably as much as a present of the Encheiridion that induced Harvey to break his long silence and to reply. After a report of a discussion upon a thesis in

[6] Works, 1814, vol. iii., p. 293.
[7] Cousin's edition, vol. ix., p. 159.
[8] Opuscula Anatomica, London, 1649.
[9] Lettres, vol. i., p. 324, edition 1694.
[10] Gui Patin, par Felix Larrieu.
[11] Title-page of English edition of the Letter, 16.

1645 and a statement of objections, a most interesting discussion follows of the literature, in which the opinions of various writers are examined, particularly those of Cartesius, Conringius, Wallaeus, and Plempius.

It is quite possible that the second "Disquisition" of Harvey to Riolan, published with the first in duodecimo form at Cambridge in 1649, was brought out by Riolan's latter publication, though it is not directly referred to. Little did Harvey appreciate that his old friend was both blind and deaf—incapable of seeing obvious facts. It was not a question of being conversant with anatomy or of having had experience, on both of which points Harvey dwells at length. Riolan knew his anatomy as well as, or better than, any man of his generation. It was not that he would not—but that he could not—see the truth which was staring him in the face. As Reynaud[12] mentions, an occasional thesis (Fagon, 1663; Mattol, 1665) supporting the circulation did slip through the Faculty: but the official recognition in France did not come until 1673, when Louis XIV. founded a special chair of anatomy at the Jardin des Plantes for the propagation of the new discoveries. The satire of Molière and the "Arrêt Burlesque" of Boileau completed the discomfiture of the "anticirculateurs," but it had taken nearly half a century to overcome the opposition of those who saw in the new doctrines the complete destruction of the ancient system of medicine.

Even when full grown in the conscious stage truth may remain sterile without influence or progress upon any aspects of human activity. One of the most remarkable of phenomena in mental biography is the failure of the Greeks to succeed after giving the world such a glorious start. They had every essential for permanent success: scientific imagination, keen powers of observation; and if in the days of Hippocrates the mathematical method of interrogating Nature prevailed rather than the experimental, Galen carried the latter to a degree of perfection never again reached until the time of Harvey. Only when placed in its true position in relation to Greek religion and philosophy, as has been done so skilfully by Gomperz,[13] do we realise the immensity of the debt we owe to those "our young light-hearted masters." And Gomperz makes clear the nature of the debt of Greek thought to the practical sense of the physicians. But alas! upon the fires they kindled were poured the dust and ashes of contending philosophies, and neither the men of the Alexandrian school nor the brilliant labours of the most encyclopædic mind that has ever been given to medicine sufficed to replenish them. Fortunately, here and there amid the embers of the Middle Ages glowed the coals from which we have lighted the fires of modern progress. The special distinction which divides modern from ancient science is its fruitful application to human needs—not that this was unknown to the Greeks; but the practical recognition of the laws of life and matter has in the past century remade the world. In making knowledge effective we have succeeded where our masters failed. But this last and final stage, always of slow and painful consummation, is evolved directly from truths which cannot be translated into terms intelligible to ordinary minds. Newton's great work influenced neither the morals nor the manners of his age, nor was there any immediate tangible benefit that could be explained to the edification or appreciation of the "ordinary man" of his day, yet it set forward at a bound the human mind, as did such truths as were proclaimed by Copernicus, by Kepler, by Darwin, and others. In a less conspicuous manner Harvey's triumph was on the same high plane. There was nothing in it which could be converted immediately into practical benefit, nothing that even the Sydenhams of his day could take hold of and use. Not so much really in the demonstration of the fact of the circulation as in the demonstration of the method—the *Inventum mirabile* sought for by Descartes, the *Novum Organum* of Bacon—lies the true merit of Harvey's work. While Bacon was thinking Harvey was acting, and before Descartes had left his happy school at Le Flèche Harvey was using *le nouvelle méthode;* and it is in this way that the "De Motu Cordis" marks the break of the modern spirit with the old traditions. No longer were men to rest content with careful observation and with accurate description; no longer were men to be content with finely-spun theories and dreams which "serve as a common subterfuge of ignorance"; but here for the first time a great physiological problem was approached from the experimental side by a man with a modern scientific mind, who could weigh evidence and not go beyond it and who had the sense to let the conclusions emerge naturally but firmly from the observations. To the age of the hearer, in which men had heard and heard only, had succeeded the age of the eye, in which men had seen and had been content only to see. But at last came the age of the hand—the thinking, devising, planning hand; the hand as an instrument of the mind, now re-introduced into the world in a modest little monograph of 72 pages, from which we may date the beginning of experimental medicine.

No great discovery in science is ever without a corresponding influence on medical thought, not always evident at first, and apt to be characterised by the usual vagaries associated with human effort. Very marked in each generation has been the change wrought in the conceptions of disease and in its treatment by epoch-making discoveries as to the functions of the body. We ourselves are deeply involved to-day in toxins and antitoxins, in opsonins, tulases, and extracts as a direct result of the researches in bacteriology and in internal secretion. There were sanguine souls in Harvey's day who lamented with Floyer that the discovery had not brought great and general innovations into the whole practice of physic. But had the old Lichfield physician lived he would have seen the rise of a school based directly upon the studies of Harvey and Sanctorius, the brilliant reasonings of Descartes, and the works of Bellini and Borelli. The mechanical school rose in its pride on solid foundations which appealed to practical men with singular force. Very soon that "beatific epitome of creation," man, was "marked out like a spot of earth or a piece of timber with rules and compasses," and the medical terminology of the day became unintelligible to the older practitioners who could make nothing of the "wheels and pulleys, wedges, levers, screws, cords, canals and cisterns, sieves and strainers," and they cracked their jokes on "angles, cylinders, celerity, percussion, resistance, and such-like terms, which they said had no more to do with physic on the human body than a carpenter has in making Venice treacle or curing a fever." Once accepted, men had a feeling that so important a discovery must change all the usual conceptions of disease. As has been said before, Harvey tells that he had in preparation a "Practice of Medicine conformable to his Thesis of the Circulation of the Blood," and it soon became customary to put in the title-pages of works some reference to the new doctrine. Even Riolan's "Opuscula Anatomica" makes an allusion to it. Walaeus, a keen defender of Harvey, published in 1660 a little compendium of practice *ad circulationem sanguinis adornata*, but there is nothing in it to suggest any radical change in treatment. Rolfinck's "Dissertationes Anatomicæ," 1650, embracing the older and more recent views in medicine, are *ad circulationem accommodatæ*, and even as late as 1690 the well-known anatomy of Dionis was *suivant la circulation*. With the loss of his work on the "Practice of Medicine" it is impossible to say whether Harvey's own practice was modified in any way. To part from the spirits and humours must have left his attitude of mind very sceptical, and that his "therapeutic way" was not admired (as Aubrey tells us) speaks for a change which may have set many against him. More important than any influence upon treatment was the irresistible change in the conceptions of disease caused by destruction of the doctrine of spirits and humours, which had prevailed from the days of Hippocrates. While Harvey, as he says, had in places to use the language of physiology, that is, the language of the day, he makes it very clear, particularly in the second letter to Riolan, that he will have none of the old doctrine to which the "De Motu Cordis" dealt the death blow.

But the moving hand reminds your orator, Mr. President, of a bounden duty laid upon him by our great Dictator to commemorate on this occasion by name all of our benefactors: to urge others to follow their example; to exhort the Fellows and Members to study out the secrets of Nature by way of experiment; and, lastly, for the honour of the profession, to continue in love and affection among ourselves. No greater tribute to Harvey exists than in these simple sentences in which he established this lectureship, breathing as they do the very spirit of the man, and revealing to us

[13] Les Médecins au Temps de Molière, 1863.

[12] The three volumes of his Greek Thinkers, now in English dress, should be studied by every young man who wishes to get at the foundations of philosophy. The picturesque style of Professor Gomperz and his strong sympathy with science add greatly to the interest of the work.

his heart of hearts. Doubtless, no one more than he rejoices that our benefactors have now become so numerous as to nullify the first injunction; and the best one can do is to give a general expression of our thanks and to mention here and there, as I have done, the more notable among them. But this is not enough. While we are prai-ing famous men, honoured in their day and still the glory of this College, the touching words of the son of Sirach reminds us: "Some there be that have no memory, who are perished as though they had never been, and are become as though they had never been born." Such renown as they had, time has blotted out; and on them the iniquity of oblivion has blindly scattered her poppy. A few are embalmed in the biographical dictionaries; a few are dragged to light every year at Sotheby's, or the memory is stirred to reminiscence as one takes down an old volume from our shelves. But for the immense majority on the long roll of our Fellows—names! names! names!—nothing more; a catalogue as dry and meaningless as that of the ships, or as the genealogy of David in the Book of Chronicles. Even the dignity of the Presidential chair does not suffice to float a man down the few centuries that have passed since the foundation of the College. Who was Richard Forster? Who was Henry Atkins? Perhaps two or three among us could tell at once. And yet by these men the continuity and organic life of the College has been carried on, and in maintaining its honour, and furthering its welfare, each one in his day was a benefactor, whose memory it is our duty, as well as our pleasure, to recall. Much of the nobility of the profession depends upon this great cloud of witnesses, who pass into the silent land—pass, and leave no sign, becoming as though they had never been born. And it was the pathos of this fate, not less pathetic because common to all but a few, that wrung from the poet that sadly true comparison of the race of man to the race of leaves!

The story of Harvey's life, and a knowledge of the method of his work, should be the best stimulus to the Fellows and Members to carry out the second and third of his commands; and the final one, to continue in love and affection among ourselves, should not be difficult to realise. Sorely tried as he must have been, and naturally testy, only once in his writings, so far as I have read, does the old Adam break out. With his temperament, and with such provocation, this is an unexampled record, and one can appreciate how much was resisted in those days when tongue and pen were free. Over and over again he must have restrained himself as he did in the controversy with Riolan, of whom, for the sake of old friendship, he could not find it in his heart to say anything severe. To-day his commands are easier to follow, when the deepened courtesies of life have made us all more tolerant of those small weaknesses, inherent in our nature, which give diversity to character without necessarily marring it. To no man does the right spirit in these matters come by nature, and I would urge upon our younger Fellows and Members, weighing well these winged words, to emulate our great exemplar, whose work shed such lustre upon British medicine, and whom we honour in this College not less for the scientific method which he inculcated than for the admirable virtues of his character.

A NEW HOSPITAL AT NANTWICH.—A new hospital for infectious cases was opened at Nantwich on Oct. 12th. It has been built by the Nantwich urban and rural councils jointly at a cost of £8500. It supplies a want which has been long and earnestly expressed by the Cheshire county council and its medical officer, Mr. F. Vacher. There are wards for diphtheria, typhoid fever, and scarlet fever, with 20 beds in all, and there is a nurses' home.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, BROMPTON.—The winter session of lectures and demonstrations will commence on Oct. 31st when Mr. Stanley Boyd will lecture on Foreign Bodies in the Bronchi and will give a demonstration of Kilian's Bronchoscope. On Nov. 7th Dr. S. H. Habershon will lecture on Selected Cases from the Wards. On Nov. 14th Dr. W. C. Bosanquet will deal with the Serum Treatment of Pulmonary Tuberculosis. On Nov. 21st Dr. J. J. Perkins will give a demonstration of Selected Cases. On Nov. 28th Dr. H. Batty Shaw will deal with the Sphygmomanometer and its practical use. On Dec. 5th Dr. F. J. Wethered will give a demonstration of Cases in the Wards. The lectures will commence at 4 P.M. on each of the dates.

An Address
ON
WORDS AND THINGS.

Delivered before the Students' Physical Society of Guy's Hospital at the Opening of the Winter Session, 1906,

BY T. CLIFFORD ALLBUTT, M.D. CANTAB., HON. D.SC. OXON., F.R.C.P. LOND., F.R.S., &C.,

REGIUS PROFESSOR OF PHYSIC AT THE UNIVERSITY OF CAMBRIDGE, ETC.

GENTLEMEN,—When your courteous secretaries did me the honour of inviting me to address your society in its opening session of this year I did not realise that my acceptance was committing me to an occasion so important as this. But they kindly assure me still that a momentous oration is not required of me, not even a careful discourse on some chapter of medicine, but rather a few words of general conversation—gossip may I call it?—suitable to a students' discussion society. Indeed, a bolder undertaking at this time would have been impossible for me; and, after all allowances, I am not without apprehension that my salute to you will be of a very light artillery.

Yet light as my address was perhaps to be, it must not be unfitting to its intention; and, not without reminiscences of other public debates, it came to my mind that I might endeavour to promote the economy of your own by an attempt to determine the relations of words to things; for we are all agreed that it is to things that we desire to approach, and not to occupy ourselves in unsubstantial forms or shadows of things.

In brief discourse—for an address may be brief and yet tedious—I desire to avoid those regions of metaphysical thought by which we are landed in remote and irreducible antinomies. It is not inconsistent, I hope, with a proper mistrust of common-sense to assume for current purposes an objective world and a subjective; that we are we and that things are things outside us. In this necessary assumption our concepts are models of the external world, and are useful in so far as they coincide with what we must venture to accept as "reality." Curiously enough, the human mind is not as the "mind" of animals seems to be, a mere print off of the outer world; it has an amazing liberty, or license, of speculation, largely independent of phenomena, a faculty at any rate of conceiving the world much other than it is; in part a dreaming faculty, in part an abstracting faculty; or in other words a compact of imagination and intellect. To make for himself an idea of the big world as it is must be the work of ages, meanwhile man has for working purposes this faculty of making little provisional images of it, on the lines of which he may make corresponding periodical progresses. But, as by enlargement of needs and experience mankind is prepared for larger and larger conceptions, the surviving images become idols, and these, like other idols, have from time to time to be smashed. Some men foresee more clearly the imperative iconoclasms; others see more clearly the converse side of progress—namely, that tradition, sincerely used and understood, is better than no provisional scheme of life at all. In the less mature periods of culture man is so proud of his mind, and of the little worlds it fashions, that he attaches himself most tenaciously to one or other of these images rather than to the objective world; and furiously resents any scrapping of his subjective worlds, however inadequately they may have come to represent the stage of contemporary experience. It is a hard lesson that from generation to generation man must be incessantly rebuilding himself more and more after the image of God. By things, then, I mean what we suppose to be an external world, after the manner of which we are or ought to be continually remodelling our ideas; by words, on the other hand, I mean signs, arbitrary and very variable signs, by which we endeavour to indicate these ideas and to converse with them. In a full view of symbolism these signs would appear in more than one kind: for instance, they must include drama, painting, and music: but at present we will confine ourselves to those signs only which we call language—to literary signs, and of these chiefly, of course, to scientific prose.

In contemplating the nature of linguistic signs a picturesque modern writer has figured man as standing on some point of vantage from which the vast and swift streams of the universe are seen—if there be a brother Silurian present he will recall the lines:—

> "Like a vast shadow moved in which the world
> And all her train were hurled"

—and the watcher, while the stream whirls past, endeavours to throw labels upon its infinite and fleeting parts; some of the labels stick rightly, others stick in wrong places; others, again, float along space as if attached to something, yet signify nothing. It is because many of our labels, floating as showily as the rest, ride thus upon nothing, and thus deceive us, that I am moved to our present conversation.

Not unmindful, as I have remarked, of debate in other places. Permit me to quote the following paragraph from "Coningsby": "There was indeed a considerable shouting about what they called Conservative principles; but the awkward question naturally arose—what will you conserve? the prerogatives of the Crown, provided they are not exercised; the independence of the House of Lords, provided it is not asserted; the ecclesiastical estate, provided it is regulated by a commission of laymen; everything, in short, that is established so long as it is a phrase and not a fact." So deftly did this master of persiflage lay bare the habit of men to feed themselves with words instead of with things, diverting themselves, as an old writer has put it, "by going about to catch the wind in a net."

But politics, you may say, is a game; and to use words as chaff for the passerine voter is part of the game. Well, let us turn to letters; there is in our day a new actor—the literary man, as distinguished from the historian, the philosopher, the naturalist, the grammarian, the romancer, the poet, and so forth, whose profession is not with making things but with dressing them. Not himself a profound inquirer into things, his occupation is to deck them with gauds, I had almost said to titivate them; fetching words from far to decorate what he has not created. Ornament for ornament's sake. Or, to advance these ladies' maids of literature from the green-room to the stage, we may compare their manipulation of words to a show of marionettes and their "criticisms of life" to a charade. It was no bitter cynic who said that "persons who cannot afford the time to experiment write books on the subject." These embellishers of other people's creations or researches, this smart redressing of things in precious words to catch the interest of the readers of magazines, may be conditions of democracy; yet, if we may hope that it does more harm to the journalist than to the public, it must do harm to both in divorcing manner from matter, in regarding "style" not as in the substance of the thing itself, but as an applied decoration; the thing itself being, in two of its aspects, the personal experience and this experience modified by the author's temperament. This last quality it is which is properly Style. When the style becomes but a frippery, clothing somebody else's stuff, affectations, insincerities, and false notions breed and abound. The humblest reporting is better than exuberant orchestration of other men's themes.

To turn to another side of the matter; those of us who are trained in science, reverent as we are to the memory of Aristotle, cannot help seeing that, after a widely different fashion indeed, he occupies himself too much with words. This defect in him it was which endeared him to the spinners of verbal webs in the scholastic period of modern Europe. Like them their oracle too often when seeking for causes sought them among words. Aristotle would not be the august man he is had he not laid a masterly hand also on things, especially on zoological things; but in many spheres he failed to perceive how artificial are the logical bridges by which too often he carried himself over anything but solid ground. We are told to remember in excuse that Aristotle lay under the disadvantage of knowing but one language; that had he enjoyed the advantage of a classical education, had he been educated in the comparison of words, he would have become so far detached from them as to have discovered that words are but labels, that labels are very liable to get shifted, and in no case make the museums they interpret. That this defect, in the work of the greatest mind perhaps that the world has seen, was due to his confinement within the boundaries of one tongue I hesitate to admit. Many great men, comparable perhaps with Aristotle in native intellect, although like him confined to one language, have compassed ends if less vast yet more enduring. Such men have lived, it is true, in polyglot times, but personally not a few of them had enjoyed either no linguistic culture or but a nominal degree of it. Nor in our own times, indeed, do I observe that those whose linguistic culture has been the most liberal have distinguished themselves chiefly by an emancipation from words and a devotion to things. I can conceive, indeed, that a contrary thesis might be maintained.

Now to dwell upon things rather than on words is the method of observation, which in its fulness contains the experimental method; and although it would not be fair to say that the Greeks never attained the use of this method, its practice by Aristotle, by his pupil Theophrastus the botanist, by Archimedes, or Hipparchus, never attained anything like the maturity to govern their conceptions. In so brief a bloom of culture such a consummation would scarcely be conceivable. Both before and after the Socratic period the pursuit of knowledge was mainly not by this method but by the method of public discussion. The perversions latent in this method we can see better than greater men than ourselves could perceive them at the time, and the method of public discussion and pursuit of truth by verbal controversy became almost more rampant and more perverted in the polyglot medieval universities than among the monoglot Greeks, and with less excuse. But this subject I shall return to presently, in some reflections upon words as logic.

An insight into what South called "the fatal imposture and force of words" may be received from that profound reverence for names which we observe in children—including grown-up children, in contemporary savages, and in folklore. An inquiring child is dissatisfied until he is told the name of a thing; savage man still believes that to get at the name of a person is to gain a power over him. To know the name was to have the kind of power which was obtained by the effigy, the power vicariously to injure the person. Thus persons or gods took false names, in order that the real name might be sheltered from malevolence, or that the worshipper might be spared the fulmination of the name. In Jacob's wrestlings at Penuel we note this importunity for the name. The whole Aryan family, Professor Rhys tells us, believed at one time not only that his name was a part of a man, but also that it was the part of him which we call soul—the breath of life. The Irish, at a far later date, treated the name as a substance. I need not hark back to my quotation from Disraeli to remind you that even to-day almost any reform is possible so long as names are not touched; so persistent is our habit of regarding the name as the vital part of identity. And unfortunately we go on building with names when the things are altered or wasted away, as sometimes beavers pathetically persist in constructing dams and canals when the water has gradually dried up, or has changed its course. If we realise how a word may survive to oppress and mislead us, as other ghosts do, when the underlying thing has dissolved, we shall be more careful in setting up imposing names, as we physicians are very prone to do, until we are sure that the thing is there; and in no case shall we let a name give an absolute value to temporary or developing notions. The urgency of this lesson in medicine I will illustrate hereafter.

Meanwhile we must acknowledge that there is a strange magic in names, a charm of which we could not wish even our greatest makers to be devoid. Not old women only take comfort in "Mesopotamia." It is easy even on the instant to be sure of finding many an illustration of this charm upon the poets. Assuredly Homer did not write the following words—as commentators say—just as a "catalogue," but greatly for the joy of the words (forgive my reading the original; the sense does not matter):

> Οἱ δὲ Πύλον τ' ἐνέμοντο καὶ Ἀρήνην ἐρατεινὴν
> καὶ Θρύον Ἀλφειῶο πόρον καὶ εὐκτίτον Αἰπύ,
> καὶ Κυπαρισσήεντα καὶ Ἀμφιγένειαν Ἔναιον
> καὶ Πτελεὸν καὶ Ἔλος καὶ Δώριον, ἔνθα τε Μοῦσαι
> ἀντόμεναι Θάμυριν τον Θρήικα παῦσαν ἀοιδῆς,
> Οἰχαλίηθεν ἰοντα παρ' Εὐρύτου Οἰχαλιῆος, ... κ.τ.λ.

Nor Milton these:—

> "Next Chemos the obscene dread of Moab's sons
> From Aroar to Nebo and the wild
> Of southmost Arabim; in Hesebon
> And Horonaim, Seon's realm, beyond
> The flowery dale of Sibma clad with vines
> And Eleale to the Asphaltic pool."
> *Paradise Lost*, I., 406.

From such sonorous cadences, half-sensuous, half-imaginative and memorial, words which like Juno's eyelids or Cytherea's breath, or, like that homely one "Daffodil,"

falling as fragrant from Dis's wagon, words which are emotions rather than thoughts, we pass easily on to consider what knowledge words carry to us. Words for the mind are fraught with three qualities at least—with Sense, Meaning, and Significance.[1] By Sense we indicate the direct intention of the very words themselves, although the sense is often dependent more or less upon the context; and we know, moreover, that many words have more than one direct sense; for instance, "a man of parts" may be a man of talents or an actor; and so forth. By Meaning we indicate that which the author wished to convey; a burden unfortunately too often very different from the sense. For instance, I have just read "The planter must work hard for nine years, and only in the tenth year will he make profit"; a hard saying indeed until we guess that the writer did not mean the sense, but meant the planter would not make any profit until the tenth year; though thereafter we trust an annual profit. Thirdly, by Significance we mean something more diffused and impalpable than either sense or meaning. For instance, few sentences are more significant than this of Hippocrates on a form of sterility which the Scythians attributed to divine visitation: "For my own part," says the Father, "I think that this malady is divine as all maladies are divine, that no one is more divine or more human than another, but that all are divine alike."[2] It is fallacious, no doubt, to endue the words of an ancient thinker with modern significance; but it is no unreasonable licence to read in these words an anticipation of the deeper thought of our own day on the conception of God. Or, again, to say that in man the male mamma has virtually no outward channels in sense and in meaning might seem an obvious and almost insignificant statement; but does it not become highly significant when we remember that primary cancer of the male mamma is a very rare event?—so rare that I have never seen it. Such examples elucidate Significance better than any description can do: perhaps indeed it is difficult to define significance without implying also something which the reader brings with him; certainly a great part of his significance the author may not have deliberately foreseen and intended; it is often something intuitive, springing from his sympathy and imagination as well as from his systematic purpose. Whether Carlyle were fair or unfair in attributing to Mrs. Mill "much unwise intellect," Mill himself illustrates the distinction of Significance in this, that the significant part of his writings is generally felt now to lie less in his sense and meaning than in a sympathetic humane aspiration which, in an intimate but intangible way, animates almost the whole of his works. This quality of Significance is then indeterminate; it has a certain remoteness and ideality, and if cribbed in bare propositions is apt to evaporate. Comparatively and respectfully speaking, Macaulay has always seemed to me among great authors as deficient in significance, as of more accuracy and learning than of insight, as lacking in purport beyond his purpose, and in the ideality which, apprehending and living in the growing edge of things, sees and signifies them *sub specie matris creatricis*. For it has been well said that the whole globe of the earth is but a nutshell in comparison with its significance. To distinguish yet more closely, I might speak of Carlyle and Ruskin as authors who have significance almost in inverse ratio to their formal and often very vague or fallacious doctrines. Their faults were diffuseness, incoherence, lack of concentration and selection, but not insignificance. No little of the significance of Carlyle was his contempt for phrases; his grip of reality, of things; for this significance his stories were but parables. I wish we could feel sure that even in the very strongholds of science we are in no danger of this inveterate disease of taking words for things.

But before entering upon the use of words in natural science I would regard for a moment their use in logic. The basis of logic must consist in a confidence that the minds of men, if not identical, have a community of nature; that they are so far alike that they can harmonise and make mutual appeal one to another. The personal equation, the individual temperament, is only so various as to give a piquant variety to our agreements. We are as different instruments in one orchestra, each with its own quality but all with the same tonality and the same gifts of congruity. Locke said of logic that one cannot apply the syllogism until the truth is ascertained, and that then one does not want it. The answer may be, nevertheless, that having apprehended a truth we apply the syllogism to discover and formulate the deftest, most economical, and most effectual mode of expressing it. Yet there is no small danger lest we should not use logic thus clear-sightedly, but should be tempted to suppose its manipulation of words to be a manipulation of things; lest the constructor of syllogisms should suppose himself a creator of truth. In the Middle Ages men fell into this kind of aridity: they forgot that as we abstract we are departing from things, and passing into a land of symbols; out of the turmoil of natural events, colours and contingencies, into a land of artificial schemes, and may too readily leave observation for ingenuity, and things for formulas. Thus we are prone to suppose that truth is to be revealed by the conflict of argument, and, what is worse, to construct "thought cages" for ourselves and to hop contentedly about in them.

Of a certain ample head of a College in Oxford—a "warm man," as the phrase goes—it is told that on returning from a lecture of Bonamy Price, then professor of political economy, on the meaning of Money, the Warden exclaimed, "Mere logomachy, mere logomachy! I know"—slapping his breeches pocket significantly—"I know what money means!" The Warden was aware of the peril of abstractions. Undoubtedly, however, in the last hundred years we have been devoting ourselves, and with marvellous success, not of course to get rid of abstractions, but to divest them of "substance," to appraise their value as devices of thought, and to determine their functions; yet we are, notwithstanding, still a prey to formulas and accept words for things. And we err in two curiously opposite directions: we personify names, and then, because by this factitious solidity they impose upon us, we leave them standing while we are no less busily, if unwittingly, engaged in pulling to pieces the concepts to which they were applied. Thus names become flimsier than ever; no longer corresponding even to concepts they are but the rags of thought. If thought is to have any consistency we must keep a jealous eye to the precise connexion of names and concepts; if on the contrary we keep dissolving, enlarging, or altering the contents of our mental museum and, while still the slaves of names, leave the labels as they were, we cannot be saved from a regiment of fictions.

Some of you who have heard my teaching before must forgive me if I repeat my insistence that the name of a disease is not, as it is continually regarded, a thing. There is no such *thing* as typhoid fever, as angina pectoris, as spleno-medullary leucæmia, and so forth; the things so called are Wilkinson, Johnson, and Thompson, who after their kinds are afflicted not alike, but within such limits of similarity as to lead us to class them together and to form a general conception of them. Yet still we overhear at learned societies physicians whose shoe latchets I am not worthy to unloose contending, even with heat, whether this name or that is a "morbid entity." Now "entity" is anyway a bad word, as words can be bad; it was born badly, and has kept bad company. It was born to signify that reality of substance which was once supposed to underlie abstract names, and in these ontological circles it has moved ever since. If we are to speak at all of "entities" in disease, these must be not the names, nor even our concepts, but the things—the thing Thompson and the thing Wilkinson in certain phases of their being. The moment we depart from these objects we desert the names of things for the names of abstractions in which no entity can lie, the name being but a label to denote a somewhat arbitrary and ideal group of characters, or type, never perhaps manifested in nature as a whole, but to which certain individuals are continually approximating. I do not pretend for a moment that we can do without abstractions; without them reasoning would be impossible: our safety lies not in avoiding reason but in being quick to recognise the tendency of ratiocination to carry us away from the only pregnant subjects of reason—namely, from things, with which reason should never cease habitually and steadily to concern itself.

It is only by examples that discussions such as this can be made clear. In epilepsy, for instance, we observe a vast number of persons attacked in modes not identical but similar, modes, however, the features of which shade off by insensible transitions into the features of other groups of symptoms; so that our concept is not of an absolute but only of a relative uniformity. This we should remember when we use the name; as we remember that when we call

[1] Students of this subject must not forget, among nearer sources, to recognise their debt to M. Bréal and Lady Welby, whose treatises on "Significs" have brought this subject within the reach of the general reader.

[2] De Aeris, &c., § 22.

a certain group of stars Orion, or Charles's Wain, that there is no rigid division between these star groups and those of the neighbouring constellations. Now epilepsy is no more an entity nor an absolute idea than Orion; it is the name of an arbitrary group, so separated for the convenience of the thinking faculty of finite beings. So far as to the nonentity. But, as I have hinted, we proceed, having set up our entity, to treat it as savages treat their images, to shake and to harry it at our caprice. Surely, having accepted a name for a group, we ought to keep to it; and yet we find our friends daily calling widely different concepts by the same label of epilepsy; for instances, puerperal or uræmic convulsions, Jacksonian convulsions, certain insanities, and so on, events so very different both in nature and grouping that, if we give them also the same name of epilepsy, we shift our things without shifting our labels. Or, again, consider angina pectoris; if there be a uniformly recurrent group of clinical features it is that for which this name was invented; yet we shift the label about, now to spasms of neurotic women, now to vague and casual cardiac pains or discomforts consistent with almost any kind of heart disease. Most grotesque, perhaps, are the "pseudo" compounds, such as "pseudo-angina," "pseudo-leukæmia," and the like; think for a moment of calling scarlet fever "pseudo-measles"! yet it is not very long since these two maladies were distinguished. It were but too easy for me to prolong such a list of ambiguities due to shifting our labels, or to shifting our concepts under the labels; but these must suffice. Remember that when it is asked if such and such a group of systems be a "morbid entity" or not, that since the day of William Ockham we have given up entities, that the question is now one only of convenience of reason; but that when we have once agreed to give a certain name to a certain morbid series of events—arbitrarily agreed, that is—then we must stick to our label; for if the label is to be shifted about, or the things under it shifted, all accurate reason comes to an end. The best labels for diseases are such names as epilepsy, measles, leprosy, Graves's disease, and the like, which, having no attachment to hypotheses, are readily carried to new anchorages. One may walk dryshod from one disease to any other, yet on the other hand it is no less true that, because of the large differentiation of his parts and organs, in Man his morbid processes tend to a corresponding uniformity of recurrence; his symptoms recur in similar groups and orders—symptom-groups or syndromes as they are called by certain nosologists who are desirous of some name finer than the old term "disease," or are possessed with the tenacious notion that a disease is a real something in itself. But diseases are not even species, such as cats and toads, but abnormal, though not altogether irregular, behaviours of individuals.

Once more; not content with this ambiguity we entertain the converse notion also that, give it a name big enough, we can make a disease of a symptom. For example, bradycardia and tachycardia, symptoms, in their degrees, of many a morbid process, impose upon the unwary student as even themselves "morbid entities," a notion twice removed from the truth, a shadow of a shade.

Our debt to the morbid anatomist is so profound that in our gratitude we are forgetting that the pathologist is not a clinical physician; indeed, that so long as he is denied right of access to the living patients in the wards he is becoming more and more a man in a balloon. His laboratory is full of things no doubt, and hitherto he has dwelt soundly in things; but chiefly in dead things, not in things at work; yet our only real things are processes. Yet the pathologist has been largely concerned in undermining our clinical concepts; and so invaluable a service has he done us in compelling us to occupy ourselves with things rather than words that we are gratefully disposed to believe he can do no wrong. Hence, without protest, we have allowed him to re-label some of our things with his labels; often to our advantage, but at least sometimes to our error. For instance, the pathologist has seduced us into allowing him to use the label of arterio-sclerosis as the name of a disease. Now if for the physician a disease is a series of symptoms recurring with such uniformity that we think it convenient to distinguish it with a name, arterio-sclerosis is not such a series; it is not a series of symptoms at all; it is a result, a statical result of foregone symptoms, probably of more than one series, and, if so, probably itself a compound name even in pathology. The physician who recognises the imperative duty of dwelling in things ought to guard himself from being supposed to mean only things that stand still; his sphere is on the contrary with things in motion; he is a master of dynamics. We do not agree with those opponents of Heraclitus, who said that moving things could not be subjects of thought. To take another instance; the physician, unfortunately, it is true, has given the name of "granular kidney" to a certain series of symptoms, and a very characteristic series it is; headache, nausea, high blood pressure, anæmia, emaciation, debility, retinitis, vomiting, coma, make a very imperfect summary of them. Now the pathologist has taken to the use of this clinical name for every kidney more or less granulated by fibrosis; but is he justified in saying of any such case to the physician, I mean with a clinical connotation, that the "kidneys were more or less granular"? For, in this sense the adjective is not clinical, it is but roughly descriptive of a dead organ; yet the bandying of it between the pathologist and the physician is a daily source of error and confusion. The clinical problem is whether the fibrosis was but a local expression of a general atrophic fibrosis, or originated and consisted in a very slow toxic necrosis of the secreting structures of the organ with a substitutive fibrosis.

But I must hasten on to another direction in which logic is apt to generate a reliance on words to the neglect or misinterpretation of things. In logic we are able to separate qualities of things, and to place them in divers categories so distinct that we are seduced into regarding these factitious categories as things. For purposes of analysis we may, and indeed we must, often study divers aspects of a thing separately, but only as an artificial and temporary expedient; not, as we have seen, so as to conduce to a habit of endowing these several aspects or qualities with independent life, or so as to blind us to their essential and active unity and integrity. We have hampered ourselves, for example, not exactly by considering structure and function severally, as a temporary device of thought, which is not illegitimate, but by dwelling on either to the exclusion or neglect of the other. Thus absorbed in the discoveries of morbid anatomy pathologists for many years forgot the genetic processes in which their specimens had their origin. Both in pathology and in clinical medicine, moreover, logical definitions were formulated which tied up living medicine in bandages as stifling as those in which Andrea della Robbia swathed his babies on the Loggia of the Hospital of the Innocents: but in biology definitions can never be more than summary descriptions. In a higher sphere of speculation the Athanasian creed is a notable collection of the surds which logic can manufacture for those who take abstract qualities for things. It is not the life but the mechanism of thought. A bitter controversy raged for centuries over a purely logical distinction between faith and works; the one being of course a function of the other. So, again, in psychology analytical divisions are made between Intellect, Imagination, and Will, factitious divisions which find their way into practical matters, to the prejudice of the gravest interests of education, sound criticism, and the conduct of life. Even yet it is hard to convince people that these distinctions are purely logical, having no several function; and that every action consists in a fusion or rather in the integration of all three qualities. That these qualities exist in various proportions in different individuals does not prove the independence of each of them any more than of various noses; but the assumption of such an independence, as I have urged at length elsewhere[3] has thwarted, vitiated, and even sterilised our theories of mental life and growth. In forgetfulness of the imagination, with which he himself was so largely endowed, Francis Bacon forgot likewise the part of this great faculty in scientific discovery, and fell into the narrow view of it as a mere intellectual stringing of fact to fact, as on a necklace; whereas imagination is the pioneer faculty, always beckoning intellect on; though too often, if the sisters do not walk hand in hand, feverishly and fancifully. An apple falls from a tree, everybody's fact; it was Newton's large imagination that saw in it a symbol of universal gravitation. Darwin may have collected no greater pile of facts than some other naturalists; at first, indeed, specialists for the most part fought against him; but Darwin saw the facts common to him and to them in the light of a vast imagination. Much of the work which is done in our laboratories and dignified, not improperly perhaps, with the title of research, much plotting of curves, much watching of levers and thermometers, nay not a little morphological dissection and cabinet-making, are really little more than clerk's work. To be no more than learned in facts and opinions,

[3] Professional Education, Macmillan, 1906.

with whatsoever skill in methods, is not to make knowledge. Bundles or files of facts are not science until the man with the formative, let me say the creative, insight comes along, who by the fusion of intellect and imagination seizes upon the significant facts, those which give him the lines on which to build up aggregates of materials into a conceptual edifice. Emil Fischer waxes very bold, and speaks of the "intuition which is the essential gift of the organic chemist." It almost makes one's mind ache to try to conceive the mental detachment, the power and compass of the imagination which realised the heliocentric astronomy; a conception which, for the ordinary man, flouts all earthly experience. Yet we were warned from Olympus a few weeks ago that "it is the business of science to present the facts, and to let them alone"!

No less factitious and eviscerating is the verbal division between "pure" and "applied" science, as if we could have a science of nothing; such was the divorce between medicine and surgery with which I have already dealt elsewhere.[4] The homily of all this is to insist that as we abstract we depart from things; and the wider the successive abstractions the farther we are leaving things behind, the more and more are we eliminating those conditions and contingencies in which processes, organic and inorganic, essentially consist. Science is not creation but analysis of creation; and the strange adoption of the word "synthesis" to signify not the fullest life in the fullest environment but the uttermost epicycles of abstraction is an instance of the confusion wrought by misuse of words.[5] General principles then are not applicable to things until we have reconstructed all or much of those very complexities in real processes which we had been at the pains to abstract. In medieval times so fastidious were logic and abstraction that practice became a vulgarity, and he was the greatest teacher who carried his pupils farthest from things; a departure from reality which brought about a grievous revenge. Since Galileo we have been discovering that our abstractions must incessantly be fertilised, tested, braced, and articulated with facts; that is to say, with systematic but common experience.

Yet, I repeat, the dangers of abstraction have by no means vanished even in the ranks of natural science; the soaring vanity of the human mind is seen still among those aeronauts the "pure scientists," as well as in the dry academic temper of humanistic students. The boast that a study is lofty in proportion to its uselessness, the conceited distinction between pure and applied science is still heard, even in the laboratory. Many Cambridge scientists were so shocked at the suggestion that a brewers' research should be established among us that the suggestion was frowned down, not because the objectors were teetotallers, but because brewing is vulgar; and possibly useful. In some high quarters the establishment of engineering met at first with a like chilling reception. Medicine likewise, the mother of the biological sciences, because she deals with things, has always been for our serener circles, a Cinderella, blooming maid as happily she has grown nevertheless. But it may be objected, surely the laboratory deals with things! Far nearer to things indeed it is, when compared with the lucubrations of former times; but the laboratory, invaluable, essential as its work generally is, is apt to dwell only half in things; and nature will have no half loves. It is in the full commerce of nature and men that the problems fruitful of science arise; their events and processes, vulgar as they may be, are full of the unexpected, and it is beyond the imagination of any scientist even to conceive the combinations and emergencies of practice unless he is conversant with things. Furthermore, were he to try never so generously to imitate natural processes and events on his artificial platform, he could not possibly reproduce them with their environment and complexities. The navigator of models in a tank would cut a poor figure as captain of a man-of-war in the Atlantic. So it is that without periodical steeping in the world of practice theoretical researches tend to remoteness and vacuity. It is by continual touch with Mother Nature that we renew our strength, and for her nothing is common or unclean.

It may be protested that logic has surely been an engine of progress in reason in the past, and it may be asked what is to take its place? The answer is, first, that no one desires to banish logic but, while keeping it in a subordinate place, to remember always its artificial nature; secondly, that formal logic is now surpassed, if not superseded, by the interpretations of evolution, by a natural logic of affinities. But this is too large and perhaps too familiar a chapter for our thoughts to-night.

So with your permission I will turn from the perils of logic to the perils of metaphor. There are certain hard-headed folk who stoutly declare that metaphor is altogether intolerable, and by the sober author must be eschewed. But unfortunately these protestants protest in metaphor, for metaphors have so intimately penetrated and grown into the very structure of language that speech without metaphor is about as possible as to jump off one's own shadow. If we consider the matter for a moment we shall see that to begin to think is to begin to compare, and that this implies the use of analogies: dangerous tools of thought, it is true, but inevitable instruments in subjects of which the intimate nature or homology is yet unknown. Now metaphor is of the nature of analogy. Metaphor, however, is for illustration rather than for argument; and we shall have a care how far it takes us; especially in natural science where our very purpose is to dissolve superficial, allusive, or partial comparisons into the profounder comparisons of genesis. It is in the conveyance of relatively finished conceptions to other minds that the man of science may well use metaphor deliberately; and for such restricted purposes Huxley and many another scientific author of the highest rank have used it freely. And could a lecturer on the influence of the sun's rays desire a more convincing prophecy of their virtue than this metaphorical passage, written more than three hundred years ago by one of the greatest and least known writers of English prose[6]: "Nor does [the Sun] only illuminate all these objects in an idle manner; its beams are operative, enter in, fill the pores of things with spirits, and impregnate them with powers, cause all their emanations, odors, virtues, and operations; springs, rivers, minerals, and vegetables are all perfected by the sun; all the motion, life and sense of birds, beasts and fishes dependeth on the same;" and so on. Metaphor is then analogical argument heightened by imagination, and as such must contribute to the increase of wisdom. To defend metaphor by metaphor I would remind you that it was not the horses of the sun but their incapable driver who caused the disaster. Metaphors then are indispensable, but must be carefully chosen, must be regarded rather as illustrative than explanatory, and must not be pursued beyond the measure of apt correspondence.

For my part I think less harm is done by metaphor which can be appreciated as such, than by equivocal words; and it is to such words, to misused or degenerated words, and to the impostures and tyrannies of words, that I would in my few remaining paragraphs, however briefly, engage your attention. Of equivocal words and of the harm they do, there is no end. Some of you may remember the words of Plato in the Phædo that false words are not only in themselves evil but infect the soul with evil. So in science they infect the understanding. I must run the risk of discursiveness, and point to a few of them as they come. Some words are by nature of elusive temper; thus the word "force" by its equivocations has caused infinite trouble to men of science; they have been hunting it down this hundred years, but it has not been quite cornered yet. "Law" has more mischief to account for, as by its double dealing it carries error in all directions. Day by day we see well-meaning men confusing themselves and others by ignoring that in science law is not a rule imposed from without but an expression of an intrinsic process. The laws of the lawgiver are impotent beside the laws of human nature, as to his disillusion many a lawgiver has discovered. The word "compensation" we find frequently used in Medicine as a *vis medicatrix ex machinâ*; whereas we ought to mean that when a system in equilibrium has found itself able to re-adapt itself to a certain incident disturbance it survives, otherwise it is upset; this re-adaptation, on which its stability depends, varies not with any benevolent purpose or guiding principle, but with the intimate limits and conditions of the system itself. Other words are question-begging; such, in my opinion, is the word "mechanical" in its modern application to the cosmical order. Surely a

[4] The Historical Relations of Medicine and Surgery, Macmillan, 1905.

[5] I have been asked why I did not avail myself of the *locus classicus* on the sorcery of words—namely, the advice of Mephistopheles, "Generally speaking, stick to words" &c. Well, a quotation, even the aptest and best, can become trivial, and my readers probably know where to find it, in the fourth scene of the first part of *Faust*. Perhaps a little less generally familiar is Mr. Shandy's "'Twas not by ideas, by Heaven, his life was put in jeopardy by words."

[6] Works of Thomas Traherne. Edited and published by Dobell, 1906.

machine is a system of tangible parts arranged to compass certain effects when it is set agoing, directly or indirectly, by human agency; left to itself it is impotent. We note the old error of Paley and the watch restored to respectability by modern philosophers. The philosopher may say that he does not intend the word to be used in its vulgar sense, but his readers do; and not only so, he himself vitiates his argument by many an implication of this meaning and speaks scornfully of a mechanical conception of the universe. "Utility," again, and its adjective "utilitarian"—what wars have been waged over these words; some disputants using them, as in common parlance, in the sense of immediate profit; others in the sense of remote profit—the old quarrel, by the way, between the "pure" and the "applied" science champions. Nay, let me spy into the citadel—into truth itself! Pilate was no "jester" when he asked—What is truth? for we have not yet agreed what the name is to mean. Is truth an absolute transcendental existence; a transcendental whole, yet in relation with us so far as to govern our ideas with an authority, as it were external? Or is it natural, partial, and relative, and to be found in the gradual establishment of a harmony between man's normal desires, and his satisfactions in experience? Or again, does it lie simply in affirmative propositions? The word is used chaotically. No doubt, as we have seen, a word may have two or more orderly senses, to be severally determined by the context; and truth may be used by metaphysicians in the first sense, by naturalists in the second, and by logicians in the third; but if so let this discrimination be steadily observed. On the other hand, the word is unduly neglected when truths are called "facts" Few abuses of language are so perverse as the misuse of the word "fact." I have grown accustomed to anticipate, on hearing it, a more than usually hazardous opinion, and nearly always some general statement depending upon facts; rarely indeed the proper sense of the word—namely, something which *has happened*. The word has become indeed so ambiguous that it is no longer trusted alone but has to be guarded as in the phrase "actual fact." The common use seems to be that my opinion is a fact, your opinion is a theory. Theory, on the other hand—the highest range of scientific truth—is used almost as a term of contempt. A brilliant author and man of science wrote the other day—"this which was never more than a mere theory"—never, that is, more than conjecture; or shall we say fad, craze, or moonshine? We cannot defend ourselves by pleading that we have more care for the thing than for the word. We might as well shuffle about the names of our collections of butterflies and beetles and so qualify ourselves for the giddy supremacy of Toinette—"Moi, je suis l'inexactitude même." Thus dull Britons are encouraged to vilipend the systematic results of investigation and to content themselves with rule of thumb.

But as I have spoken at length of these words "theory" and "fact" in my little book on "Composing Scientific Papers"—a book which I hear is well known to you—I will not weary you with these or more examples of false words. Nor may I do more than allude to the words, abundant in politics but not confined to it, which by their demoniacal power force us into grooves; such words as socialism and individualism, free trade and protection, and so forth. The word "specialist" is scarcely wanted, for "expert" is a better one, and "specialist" has become "groovy" in the sense of a narrow and warped and perhaps not altogether disinterested observer, at best a harper on one string. In truth Nature is one and indivisible, the way into her fields if long and hard is not narrow, and from whatsoever gate we enter in spreads to us, if our eyes are open, as wide a view. Some words again are so pompous that they exercise a spell over us by their self-assurance, such as embryocardia, meiopragy, mithridatisation, and the like—words in buckram we may call them—for which we quickly snatch up somebody's missile of "Scheinphysiologismus." Other words and phrases again are flimsy rafts, which take us, like the Jumblies, to sea in a sieve, with tobacco pipe masts and sails of pink paper; thus one may set sail on such a sieve as "the disease is no doubt due to a faulty metabolism, giving rise to automatic intoxication"; and similar clinical cant, which I will not pursue. Then there are thimble-pea words, which may be popped in anywhere, such as "fatty heart" in clinical diagnosis. And there are the great multitude of South's "impostors"; the mouth of the alienist is full of them; some wit has called them "sandheap words." And there are some sinister words which distil boon or bane insidiously, of which we may take disease unwittingly, as our forefathers accepted their bodily infections. Metaphorical words are apt to have this quality in them, as when one ingenuous disputant calls a constituent element a *residuum* and the other calls it a *quintessence!* Comparatively harmless are the mere tokens with which some traders are satisfied; such currency, for instance, as "tabby-cat striation," and the like, which are frequently offered to us on the examination exchange.

Nihil in intellectu quod non prius in sensu: mind in its widest sense is, as we know, fed and built up by the senses, by the incessant streaming in upon us of outside impressions. Thus it is that animals, which within their narrow and immediate sphere live incessantly in sensation, are so extraordinarily successful in it. Their almost infallible perception and memory of experience is rather unconscious absorption than deliberate observation. We see the same high seriousness in children. Academic man, on the other hand, by abstraction is continually tending to arrest or ignore the inspiration of these centripetal nervous streams which should not antagonise but continually conspire with thought. Reflexion is imperative for us; thought is that attribute which is most divine in us; by its symbols we make the universe our own: yet if we permit divorce of thought from its materials—and it is by words that we think—if we let thoughts and words drift away from things, the mind itself, our minds individual and collective, must be surely impoverished. If we give no heed to our symbols—to our means of conceiving, recording, and formulating the conditions under which we have to design our world, our lives and our faiths, we shall be drawn almost as inevitably into error as if our observations were themselves erroneous. Watts, who with the creative faculty of an intellectual imagination, had in supreme degree the artist's power of penetrating, selective observation, and his mastery of expression, was ever counselling this incessant openness to the senses, with their burdens of things and experience. And, as our minds are thus enriched, as they become not less and less but more and more receptive of impressions, our words must be kept moving and continually re-tested for appositeness and values. They are winged things which grow, flourish, and decay, and are spiteful if we misuse them. Our most fundamental assumptions must be always under reconsideration, our rules of evidence made stricter and stricter, our appreciation of values more and more refined, and our principles of selection more and more severe.

And not our facts only, but also the *litera scripta*—documents, traditions, authorities—must lie always under question. Without the past the present cannot appear to us in its true perspective nor be fully interpreted. Without the history of medicine, and study of the words in which it is contained, modern medical ideas cannot be fully understood, nor the place and genius of our profession rightly known. Medicine is not a game to be played merely with science, coolness, and dexterity, but a calling to be pursued as humanly as the humanities must nowadays be pursued scientifically.

Finally, for this debating society our discourse on Words and Things has had little result unless I have led you to see more clearly that the purposes of it ought to be an unwearied contribution and verification of things; a vigilant criticism of insidious plausibilities, dislocations, ambiguities, unveracities, and insincerities of language; and not only a care for the choice of words lucid and exact, but also a training in the use of them in a significant context. As you grow in wisdom you will see more and more clearly that the gain of your debate is not to bowl each other out, but to translate the values of each of your minds into the permanent values of each other and of truth. The last counsel I leave with you is that you shall take me as an awful example of talking too much; and remember the saying of Izaak Walton that "words are men's daughters, but God's sons are things."

CAMBRIDGE GRADUATES MEDICAL CLUB.—The annual meeting and dinner of this club will be held at the Trocadéro Restaurant, Piccadilly, at 7 o'clock P.M. on Thursday, Nov. 8th. Mr. Herbert W. Page, the President, will be in the chair. The price of the dinner is 6s., exclusive of wine. Members are invited to bring guests. If any member has not received notice of the above he is requested to communicate with the honorary secretary, Mr. Hunter Tod, 111, Harley-street, London, W.

ON SOME ASPECTS OF DILATATION OF THE HEART.[1]

BY ALFRED M. GOSSAGE, M.B. OXON., F.R.C.P. LOND.,
PHYSICIAN TO OUT-PATIENTS, WESTMINSTER HOSPITAL, ETC.

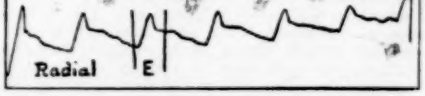
THE rhythmical beating of the heart results from the innate qualities of the muscle fibres and is quite independent of the central nervous system or of the intrinsic ganglia. The rhythm may be influenced by stimuli that are brought to the heart by the cardiac nerves but the heart muscle is capable of beating rhythmically when entirely separated from all nervous structures and in normal circumstances beats without any activity of the nervous system. The properties of cardiac muscle are: rhythmicity, which is really the rhythmical building up of a stimulus, excitability, conductivity, contractility, and tonicity. Each muscle fibre possesses all these properties and even small strips are capable of rhythmically beating—i.e., are capable of building up the stimulating substance, of being excited, of conducting the excitation to all parts, and of contracting. The stimulating substance is formed most rapidly at the great veins and so the cardiac contraction takes its start there and is conducted through the auricles to the ventricles. Conductivity is probably but poorly developed in the connecting link between auricles and ventricles, the bundle of His, so that an appreciable time is required for the stimulus to pass to the ventricle. A contraction destroys the stimulating substance, excitability, conductivity, and contractility, and during the subsequent period of rest the stimulating substance is re-formed and excitability, conductivity, and contractility are gradually recovered. When the proper relation between stimulus and excitability is reached a fresh contraction takes place.

After excitability, conductivity, and contractility are sufficiently restored it is possible artificially to excite a contraction before the normal impulse descends from the great veins and the stimulus may be applied at any part of the heart. Such an extrasystole, as it is called, also temporarily destroys the properties of cardiac muscle. An extrasystole is usually followed by a normal contraction starting at the great veins and the interval after which the normal contraction takes place will depend on how early the stimulus has been destroyed by the extrasystole. The stimulus is formed regularly and always requires the same amount of time for its formation, while a certain amount of time is spent in the conduction of the artificial excitation from the point where it is applied to the great veins. Hence the pause after an extrasystole, the compensatory pause, is longer than a normal pause except when the artificial stimulus is applied at the great veins themselves. When the ventricles are stimulated the pause may be so long that the interval between two normal contractions—i.e., including the extrasystole—is exactly double the usual interval between two normal contractions. The extrasystole, since it occurs before contractility has fully recovered, is smaller than a normal contraction, although it is always the full contraction of which the heart is at that moment capable. The earlier the stimulus is applied in diastole the smaller the resulting contraction and the stronger the necessary stimulus.

The properties of cardiac muscle can each be separately influenced by various extraneous circumstances—e.g., nervous impulses, drugs, &c.—and any change in any one of them probably to some extent alters all the others. Many of the phenomena in disease are due to such changes in the muscle properties. Tonicity plays an important rôle in both healthy and diseased conditions. The efficacy of the cardiac contraction is largely dependent on the maintenance of tone and the resistance of the cardiac chambers to over-distension is almost entirely due to muscle tone. Weakness of the muscle wall and increase of pressure in the cavity are neither of them sufficient to bring about dilatation if the tone of the muscle be intact, and hence dilatation of the heart is essentially due only to loss of tone. Poisons, fatigue, and continued distension may all injuriously affect tone and so result in dilatation and nervous influences may also lower tone.

The clinical study of morbid conditions of the heart is much facilitated by graphic records of the pulsations of the liver or of the veins at the root of the neck where these occur. The waves in such a record may be accurately timed by taking a simultaneous tracing of the radial pulse or of the apex beat, as in the method advocated by James Mackenzie. In Fig. 1, for instance, simultaneous tracings have been taken from the radial and from the jugular vein. By keeping the clockwork still upright lines were obtained in each record which exactly correspond in time and therefore afford standards for measuring off corresponding points on the two curves. On the radial curve a period E can be marked off which is called the sphygmic period and is the time when the aortic valves are open. This same sphygmic period E can therefore be marked out on the venous tracing. The sphygmic period in Fig. 1 is preceded by a wave *a*, which is evidently due to the contraction of the right auricle; this is followed by a fall *x* during the sphygmic

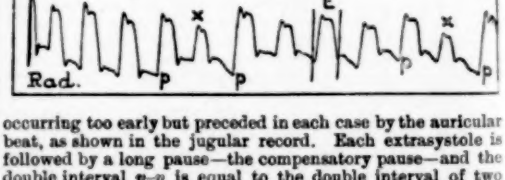
FIG. 1.



period, which must be caused by suction of the dilating auricle emptying the veins. When present this fall *x* affords one of the most certain signs of the previous contraction of the auricle, since the auricle cannot dilate unless it has previously contracted. The fall *x* is broken by a wave *c*, which from its early position in the sphygmic period is evidently due to the pulsation of the carotid artery. Only in exceptional circumstances is it possible to obtain a tracing of the jugular pulse without this wave due to the carotid, but its presence is rather an advantage than otherwise as it helps in the accurate timing of the other waves. The fall *x* is followed by a wave *v*, which lasts beyond the sphygmic period and is due to the passive filling of the veins. This wave can be seen in pressure curves taken in animals in the auricle itself.

It is probable that the heart is constantly exposed to a number of stimuli apart from the stimulus it rhythmically builds up for itself. These stimuli may arise from nervous impulses, from alterations in the composition of the blood-supply, or from foreign substances contained in the blood, and from tension of the muscle fibres themselves. In ordinary circumstances these stimuli are not sufficiently powerful to excite a contraction but with an increase of the stimulus or an increase of excitability of the muscle an extrasystole would be produced. Of these two an increase of excitability is the most frequent cause of extrasystoles in human beings. Such extrasystoles may start from the auricles or from the ventricles and in cases showing a venous pulse it is easy to ascertain their point of origin. An example of an extrasystole arising from the auricle is shown in Fig. 2. At the points *x* in the radial tracing a small systole is shown,

FIG. 2.

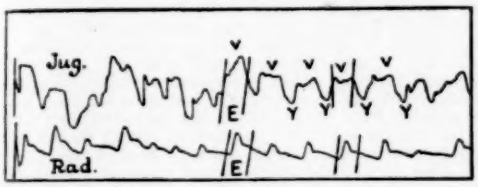


occurring too early but preceded in each case by the auricular beat, as shown in the jugular record. Each extrasystole is followed by a long pause—the compensatory pause—and the double interval *p–p* is equal to the double interval of two adjacent normal beats, which shows that the extrasystole had started from a spot on the auricles some distance from the great veins and that the excitation had not reached the great veins before the full development of the normal stimulus. After the compensatory pause the next normal contraction is of larger size than usual owing to the longer time given to the contractility for recovery.

[1] Abstract of a paper read before the Royal Medical and Chirurgical Society on Oct. 23rd, 1906.

At times, particularly in cases of valvular disease with somewhat dilated hearts, extrasystoles tend to occur regularly, giving rise to the so-called bigeminal and trigeminal pulses (an extrasystole after each normal beat or after every second normal beat). When the extrasystole of the ventricle takes place very early, and so is very feeble, no pulse may be felt at the wrist and no wave may even be shown in the sphygmogram. In this way a false bradycardia may result, the correct interpretation of which may be at times difficult. Further tracings, however, from the same patient usually clear up obscurities. When the excitability is greatly increased the number of extrasystoles may be so great as completely to obscure the normal regular cardiac rhythm. An example of this is given in Fig. 3, where all the beats appear as if they were extrasystoles of ventricular origin and it is impossible to recognise any rhythm. The administration of digitalis, two drachms of the infusion every six hours, rendered the heart in this case less rapid and less irregular, so that it was easy to recognise a rhythm and to distinguish between extrasystoles and normal contractions. Extrasystoles are, of course, not confined to dilated hearts

FIG. 3.



but may be found with hearts that are perfectly healthy, but increased excitability is one of the most prominent features of cardiac dilatation, so that it is not surprising to meet with extrasystoles more frequently in this condition.

Owing to the absence of a compensatory pause after the presumed extrasystoles in such tracings as Fig. 3 and the impossibility of distinguishing between extrasystoles and normal contractions it was at one time supposed that in these cases of delirium cordis there was an irregularity in the formation of the stimulus. It can, however, be demonstrated that with increasing excitability the extrasystoles get more frequent, giving all gradations up to the delirium cordis of Fig. 3, and that with decreased excitability a regular rhythm broken by extrasystoles is again obtained. In Fig. 3 the beats are probably all extrasystoles and therefore no compensatory pause would be expected, since when two or more extrasystoles occur together the compensatory pause is only found after the last one.

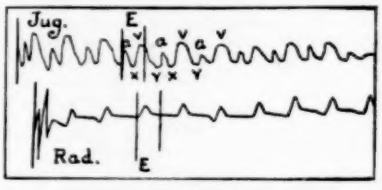
There is a further point with regard to the irregularity of the rhythm in "delirium cordis." As will be pointed out later, the inception of the rhythm in these cases is assumed by the ventricles. When in ordinary circumstances an extrasystole starts from the ventricle the compensatory pause is the longest possible, since the extrasystole does not reach the starting-point of the normal rhythm (viz., the great veins) until the full development of the normal excitation, and the ventricles have to await the next normal excitation before their next normal systole can occur. Where, however, the rhythm of the heart starts from the ventricle, the place of origin will be close to, or identical with, the place of origin of a ventricular extrasystole and hence the compensatory pause will be short, as in cases of auricular extrasystoles arising near the great veins, or absent, as in cases where extrasystoles arise from the great veins themselves. It is thus evident that an increase of excitability, and the consequent occurrence of extrasystoles, affords an amply sufficient explanation of the irregularity that is found in dilatation of the heart, even of an irregularity so excessive as to justify the name of "delirium cordis." This explanation, too, is a much simpler one than that afforded by the supposition of an irregularity in the time of formation of the stimulus.

One of the striking alterations in the cardiac rhythm associated with dilatation is the increase in rate which we invariably find. An increase in rate may be due to two causes: (1) increased rate of production of the stimulus; and (2) increased excitability. In most cases both these factors are probably at work, especially where the increase of rate is very considerable. With a very rapid heart, and so a greatly increased rate of production of the stimulus, little opportunity is afforded for the occurrence of extrasystoles. We therefore usually find that with great rapidity of the heart the rhythm is regular and not infrequently with reduction of rate irregularity makes its appearance.

Regurgitation through the tricuspid valve naturally alters the appearance of the tracings obtained from the veins in the neck. Slight regurgitation shows itself by an increase in the wave *v* (Fig. 1) and by its earlier occurrence. With greater incompetence of the valve this wave from the ventricle will occupy the whole, or nearly the whole, of the period of the ventricular systole obscuring the wave *c* due to the carotid. For instance, in Fig. 2 the whole of the sphygmic period E is occupied by the great wave *v* which is preceded by the small auricular wave *a*. In Fig. 3 the wave *v* is seen to extend even beyond the sphygmic period and to last throughout the ventricular contraction, since the small resistance offered by the veins allows the ventricle to force blood into them after the increased aortic pressure has closed the semilunar valves.

Should the auricles lose their tone in cases of incompetence of the auriculo-ventricular valves they would be violently distended by the blood forcibly thrown into them by the ventricles and hence would become extremely dilated. In consequence of this extreme dilatation the contraction of the thin-walled auricles would be very inefficient and the refilling of the ventricles would mainly depend on the quiet flow of blood into them during diastole. Mackenzie has discovered that there is a further very remarkable phenomenon associated with that more extreme dilatation of the heart which we are accustomed to call heart failure. This is the transference of the inception of the rhythm from the great veins to the ventricles. One might reasonably suppose that this was caused by the progressive dilatation of the auricle eventually paralysing it. That this is not the correct explanation is proved by the fact that in some cases of acute dilatation (e.g., in paroxysmal tachycardia) the starting of this peculiar type of cardiac rhythm is quite sudden and with recovery the auricles and ventricles again beat in their normal relation to one another. Further, it can be shown that in some cases the auricles are not paralysed but continue to beat although their systole takes place at the same time as that of the ventricles. The fall *x* in the jugular pulse (*vide* Fig. 1) is due to the diastole of the right auricle and occurs during the ventricular systole. It is impossible to imagine any other cause for a marked fall in the venous pressure during the ventricular systole except the suction of the auricle which, as Keith has shown, is largely due to the traction of the contracting ventricle on the auricle. The regular repetition of such a fall in the venous tracing becomes, therefore, one of the most certain signs of the occurrence of auricular systoles. I have been fortunate enough to meet with two cases showing the simultaneous contraction of auricle and ventricle. The girl from whom I took the tracing in Fig. 4 had chronic disease of the mitral valve with a regurgitant murmur and was suffering from a recent attack of rheumatic pericarditis along with dilatation of both right and left sides of the heart. In this tracing a wave *a* occurs regularly in the early part of the sphygmic period followed by the fall *x*, then the wave *v*, and the fall *y* due to ventricular diastole. The fall *x*, as pointed out above, must be due to the diastole of the auricle and the only trace

FIG. 4.



of the necessary preceding contraction of the auricle is the wave *a*. The systole of the auricle requiring so much less time than that of the ventricle, we find both the systolic rise in the veins and the diastolic fall from suction of the auricle completed during the sphygmic period. Mackenzie has stated that this type of cardiac rhythm may be permanent or may disappear with recovery of muscle tone. From the patient who gave Fig. 4 the same type of tracing was obtained over a space of ten days,

but on the fourteenth day the venous pulse had disappeared. As the patient had made a progressive improvement during these 14 days, with a distinct lessening of the cardiac dilatation, it is probable that at the end the chambers were again beating in their proper order.

It is more usual in cases where the rhythm starts from the ventricles to find no evidence of an auricular contraction, as in Fig. 3, where in the jugular pulse there is only a single wave *v*. It is noticeable that this wave *v* starts before the sphygmic period E and lasts beyond it. The ventricle, however, is in systole for an appreciable period before the aortic valves open and for an appreciable period after they close—i.e., before and after the sphygmic period—and it would be quite possible for the ventricle to force blood into the veins where the resistance is low when the high arterial pressure closes the aortic valves. It is probable that the contraction of the auricles where the cardiac rhythm takes its start in the ventricles is a hindrance to the circulation, since it would hamper the flow of blood towards the heart from the veins without itself sending any blood through the auriculo-ventricular valves into the contracting ventricles, but this condition would be more easily recovered from than that where the auricles are merely passive. It can well be imagined that the latter condition when once established tends to become permanent and it is remarkable how well the circulation can be maintained even for years without the auricles working. The patient from whom Fig. 3 was taken improved greatly while in the hospital and was able to get up and to move about fairly well, although there was, of course, considerable dyspnœa on exertion. Nevertheless, on all of the numerous occasions that she was examined the jugular pulse was of the same character, showing permanent paralysis of the auricles. Mackenzie has been able to examine post mortem the hearts of several patients who during life exhibited this evidence of paralysis of the auricles and in all he found a very extreme degree of auricular dilatation. One of my own cases showed exactly similar changes in the heart after death, while before death the rhythm was ventricular in origin. Although the venous pulse only gives information as to the condition of the right auricle it is probable that the left is paralysed in these cases as well. Mackenzie has noticed in cases of mitral stenosis that with the onset of heart failure and the inception of the rhythm by the ventricles the pre-existing presystolic murmur disappears, being sometimes replaced by a diastolic bruit best heard at the apex. Personally, I have not heard a presystolic bruit in any of the cases with ventricular inception of the rhythm that I have come across. The patient whose pulse is recorded in Fig. 3 had a diastolic murmur at the apex and no doubt had some stenosis of the mitral valve, while in the patient who died stenosis of both mitral and tricuspid valves was found, although in life only a systolic murmur was heard.

When fully established this type of cardiac rhythm starting from the ventricles tends to become permanent; but in the short and temporary attacks of heart failure which are not uncommon during the course of valvular disease the rhythm, after a temporary derangement, may return to the normal order of great veins, auricles, and ventricles. This is perhaps best illustrated in cases of paroxysmal tachycardia, of which some excellent tracings are given by Mackenzie and Hay. The obvious indication for treatment is to try to get the normal rhythm restored as soon as possible in cases of heart failure, or, in other words, to restore the muscle tone as soon as possible. Mackenzie does not find the ventricular inception of the rhythm common in the chronic myocarditis of older people, whereas Hay finds it common. Personally, I have taken tracings from about a dozen patients in whom I had diagnosed chronic myocarditis and in two I found the rhythm permanently starting from the ventricles. I have not yet had an opportunity of seeing the actual development of this type of cardiac rhythm, but it is apparently usual to meet with a number of extrasystoles starting from the ventricles previous to the change of type of rhythm. Gaskell has shown that in animals it is possible to make the rhythm start from the ventricles by stimulating them sufficiently rapidly. What actually causes the auricles to cease contracting in these cases is apparently, first, the loss of tone of the auricular muscle and then on the top of this the excessive distension of the chambers by the ventricles forcing blood through the incompetent auriculo-ventricular valves before the arrival of the time for the auricular contraction. Mackenzie has pointed out that the ventricular inception of the rhythm is invariably associated with irregularity unless the action is very rapid, a fact that one may express otherwise by saying that it is always accompanied by a great increase of excitability and the development of frequent extrasystoles.

Certain of the phenomena associated with cardiac dilatation are secondary to the impaired working of the circulation—e.g., the dyspnœa, the dropsy, the congestion of the lungs and liver, &c., while others are more directly concerned with the heart itself, such as pain, the actual dilatation of the chambers, the rapid irregular action, and the assumption by the ventricles of the post of starter and controller of the cardiac rhythm. The subject of pain associated with disease of the heart has been fully dealt with by Head and Mackenzie and need not be entered on. The rapid and irregular action has usually been referred to the influence of the nervous system and much ink has been spilt in discussing whether it is due to loss of vagus control or to excitation of the accelerator nerves. There is no doubt that impulses can be conveyed to the heart by the nerves exciting or inhibiting cardiac contraction or influencing the functional activities of the cardiac muscle. Tonicity would as certainly be subject to these influences, either in a positive or a negative sense, as the other properties of the muscle fibres; and it is because of the nervous influence on tonicity that we meet with the remarkable instances of sudden dilatation of the heart, so well known to all clinicians, from emotional disturbance, pain, &c. Without, however, some permanent alteration in the central nervous system or permanent irritation to produce reflex phenomena, such nervous influences on the heart would be expected to be but temporary, the only evidence we have of a constant action of the nervous system on the heart being the tonic effect of the vagus in slowing the rhythm. In cases of chronic heart disease there is a permanent increase of rate and frequently a permanently irregular action, and yet we have no evidence of there being any organic lesion of the nervous system. On the face of it, therefore, the probable source of these alterations of function would be likely to be found in the heart itself, which is demonstrably changed.

We have seen that the main factor in the causation of dilatation of the heart is a depression of the tonicity of the muscle fibres, and yet dilatation is associated with a considerable increase in at least two of the other properties of the muscle, excitability and the rate of formation of the stimulus. It is possible that another property is also increased—viz, contractility—since the dilated heart has often to do more work than the normal one. The question of contractility is a complicated one owing to the influence of the increased tension and the increased rate, but still a real increase of contractility is not improbable. An alteration of conductivity is even more difficult to estimate, but there is evidence that with increase of tone in some cases this property is diminished, and therefore it is possible that it is increased with loss of tone. It has seemed to me that the whole of these phenomena, as well as certain other peculiarities of cardiac rhythm, may be directly due to the alteration of the muscle tone.

An alteration in any one of the properties of cardiac muscle will affect to some extent all the others, and this is even more likely to be true with alterations of tone than of any other function, since tone has a considerable resemblance to an actual contraction. A contraction destroys all the other properties and we would therefore expect tonicity to diminish these other properties either directly or by delaying their recovery after a contraction. On the other hand, diminution of tone should tend to augment the other properties or to hasten their recovery after a contraction. With lessened tone, therefore, we should expect an increased rate of production of the stimulus, increased excitability, heightened conductivity and contractility.

Gaskell writes: "It would not be unreasonable to expect that different parts of the heart would vary in their tonicity, just as they vary in their rhythmicity." There seems to be a general assumption that tone is greater in the ventricles than in the auricles, and considering the greater amount of work that the ventricles have to perform this assumption probably accords with the facts. The different appearance of the muscle fibres in different parts of the heart has been noticed by Gaskell, the most characteristic and best striated fibres being found in the ventricles, the least characteristic in the sinus venosus, the fibres that join auricles and ventricles, and the conus arteriosus. It is not unlikely that the special properties of heart muscle are present to the greatest extent in the most highly developed fibres, special

structure and special function going together, this applying even more to the important property of tonicity than to the other properties of cardiac muscle. The greater relative tonicity of the ventricular muscle would keep the other functions in subjection, so that in ordinary circumstances the stimulating substance would be built up more slowly there, excitability would be less, as also would contractility and conductivity. The ultimate relations of these various properties to one another would naturally depend on the proportions in which they were originally present, which need not necessarily be the same all over the heart. Indeed, all theories of cardiac action presuppose that the properties of cardiac muscle are present in different proportions in different parts of the heart. Where tone is least developed the stimulating substance would be built up most rapidly, as at the sinus venosus, the auriculo-ventricular junction, and the conus arteriosus, places from which Gaskell has shown an intrinsic rhythm is particularly prone to start. With loss of tone there would be a general exaltation of the other functions which would especially affect the ventricles where these functions are the more highly developed. With increasing dilatation or loss of tone the sequence of events would be expected as follows: an increase in heart-rate, the occurrence of extrasystoles, at first auricular in origin but later arising from the ventricles, and at last the transference of the starting point of the cardiac contraction from the great veins to the ventricles. With the transference of the control of the rhythm to the ventricles, extrasystoles, and so great irregularity, would be conspicuous owing to the great increase of excitability except where the cardiac rhythm is very rapid. This sequence of events is exactly what we actually find in experience of dilating hearts. Contractility should be heightened, and I have pointed out that it probably is heightened in some cases, but changes in contractility and conductivity are difficult to judge owing to the marked influence on them of alterations in the cardiac rate. These functions may be, and indeed sometimes are, injuriously affected by the same cause that depresses tonicity.

Experimentally it has been shown that certain drugs increase tonicity until the heart is stopped in systole and, as would be expected from the above theory, these drugs diminish the rate of the heart. Similarly drugs that decrease tonicity, such as lactic acid, increase the rate. That digitalis increases tone has been shown experimentally; clinically we find that it diminishes dilatation, decreases the rate, and renders the heart less irregular (i.e., diminishes excitability), all of which actions would be expected from its influence on muscle tone. It is true that in some cases an irregularity appears after the administration of digitalis, as in the case recently reported by Fauconnet, where digitalis reduced the pulse from 120 per minute to 48, this infrequency being found by the sphygmogram to be due to the regular occurrence of an extrasystole unfelt by the finger after each normal beat, so that the heart was really beating at 96 per minute. Such an irregularity does not mean an increase of excitability from the digitalis but is merely a consequence of the reduction of rate allowing an opportunity for the occurrence of extrasystoles. This view is borne out by Hering's observations on the disappearance of a bigeminal pulse from the administration of atropine, in which he found that the heart only became regular when its rate was so increased that the normal impulse arrived as soon as, or sooner than, the regularly recurring extra stimulus which caused the bigeminal pulse; as the effect of the atropine wore off and the action became less frequent the bigeminal character returned. With digitalis, contractility and conductivity are usually favourably affected by the increased rest afforded by the diminished rate, this being more potent than the depressing effect of increased tonicity, but in certain circumstances they can be shown to be injured by digitalis.

It has been found that where the contractile power of the muscle is lowered in experiments with excised hearts a peculiar alternating type of cardiac rhythm is prone to set in where the heart is regular in time but the beats are alternately larger and smaller in size. Hoffmann demonstrated that with depressed contractility the beats are not only smaller but last a shorter time. Wenckebach explains the alternating action of the heart by the longer pause after such a small short contraction allowing the contractility to recover better, with the result that the next contraction is larger and lasts longer; the next pause is therefore shorter and is followed by a smaller and shorter contraction, which is succeeded by a longer pause and then a larger contraction, and so on. Depression of contractility results from a number of causes—e.g., action of water, vagus irritation, poisons, &c. Among the latter may be especially mentioned antiarin and digitalis, both of which have been shown to depress contractility and to induce an alternating action of the heart. For instance, Straub, working with antiarin, quickly induced an alternating action and ultimately before the heart stopped in systole the smaller beats disappeared, reducing the rate of the heart to half. Although excitability and conductivity were both also depressed, this halving of the frequency seems definitely to have been due to the damage done to the contractility. It is noticeable that in Straub's experiments the effect on the ventricles was more marked than on the auricles and on the auricles than on the veins, so that at one time the ventricles were beating at half the rate of the auricles and at another the auricles at half the rate of the veins. The ventricles, too, were first stopped by the drug and then the auricles, and, lastly, the veins. These remarkable results are explainable on the supposition that the tonicity is relatively greatest in the ventricles and that antiarin acts on the other functions of cardiac muscle through tonicity, but are difficult to account for on any other hypothesis. An exactly similar alternating action of the heart has been described several times in human beings and it is probable in all, or nearly all, the cases, that this has resulted from the administration of digitalis and that contractility was already depressed before the exhibition of the drug.

The jugular pulse when present gives us, as Mackenzie has shown, a very accurate method of estimating the condition of conductivity. In ordinary circumstances the contraction takes a certain time to pass from auricle to ventricle, which can be estimated by the difference in time between the wave *a* and the wave *c* in Fig. 1. Of course, other factors help to cause this interval—viz., the systole of the auricles and the presphygmic period of the ventricular systole or that portion of it before the aortic valves open. These factors, however, occupy a constant time and so do not cause any variation in the *a—c* interval. Depression of conductivity will lengthen this interval and if extreme will prevent some beats passing to the ventricle. Where conductivity is already depressed the administration of digitalis may depress it further, leading to every other beat being dropped. Drugs, then, the main action of which is to increase tone have also the effect of decreasing the other properties of cardiac muscle, while diminution of tone is invariably associated with increased rate of production of the stimulus and with increased excitability and not improbably with increased contractility and conductivity. It is difficult, therefore, to avoid the conclusion that increase and decrease of tonicity stand here in causal relation to the diminution or augmentation of the other properties.

The relationship of tonicity to the transference of the rhythm to the ventricles stands on a different footing. The explanation of the transference which is put forward here requires certain assumptions. These assumptions are not improbable in themselves but further research is wanted on the subject. It must, however, be noticed that this hypothesis affords a plausible explanation for the selective action of digitalis and antiarin on different parts of the heart. Mackenzie has expressed the opinion that where the ventricles take on the inception of the cardiac rhythm the real place of origin of the contraction is in the fibres joining the auricles and ventricles. In support of this view he points to Gaskell's observation that when the sinus venosus has been prevented from starting the cardiac rhythm, as by vagus stimulation, the ventricle may take on a rhythm starting from the canalis auricularis. On my theory of cardiac action, where tonicity plays such an important rôle, the ventricular type of rhythm would be expected to start from the highly developed ventricular fibres. With some restoration of tone, and so recovery of the patient from the more urgent symptoms of heart failure, the inception of the rhythm would be expected to pass to the least highly developed fibres. Such would be the auriculo-ventricular fibres in cases where paralysis of the auricles prevents the normal auricular inception.

Upper Berkeley-street, W.

KENDAL HOSPITAL.—A new hospital is being built at Kendal at a cost of over £12,000 and the trustees of the late Mr James Allen have just given £1000 towards it. In addition to this they have given £500 for the endowment of a "James Allen" cot.

A SERIES OF CASES TREATED BY THE INJECTION OF BACTERIAL VACCINES.

BY EDWARD TURTON, M.D., B.SC. VICT., M.D. LEEDS, M.R.C.P. LOND.;

AND

ALFRED PARKIN, M.D., M.S. LOND., F.R.C.S. ENG.,

CONSULTING SURGEON TO THE VICTORIA HOSPITAL, HULL.

IN presenting this series of cases we assume knowledge on the part of our readers of the excellent work done by Sir A. E. Wright and his co-workers and also by Dr. W. Bulloch and Dr. G. T. Western at the London Hospital, to all of whom we are considerably indebted. With three exceptions the cases have all been treated in our private practices in which the difficulties are obviously greater than in hospital practice. Our object has been to ascertain what advantages are to be derived from this mode of treatment and by the application of applied bacteriology to both medicine and surgery. We have endeavoured by working together to benefit by mutual criticism and comparison of clinical signs; this coöperation has undoubtedly resulted in a great increase in the interest of the work and has reduced in some measure by such criticism, the faults of observation and errors of deduction. The opsonic estimations and bacteriological investigations have all been the work of one of us (E. T.) but the rest of the work has been done conjointly.

In recording these cases we have included all under regular and constant treatment by this method, irrespectively of the results obtained. Previously to treatment we have, whenever possible, ascertained the exact causal germ of the disease by microscopical and cultural investigations and have estimated the opsonic index of the patient for that particular germ. In the majority of instances we have found it necessary to isolate the exact strain of micro-organism and establish its causal relationship to the disease in each case. At first we were under the impression that all infections due to any micro-organism could be treated by a vaccine containing that morphological variety of organism—for instance, a staphylococcic infection by a vaccine made of any strain of staphylococci, on the assumption that all strains were more or less identical. Such a plan of treatment, however, did not give what we considered satisfactory results and further experience has shown us that the greatest success in this treatment is attained by the cultural separation of the exact strain of organism peculiar to the patient and by the preparation and use of a vaccine prepared from that organism. This has been done in nearly all our cases but obviously the procedure entails not only a great amount of work but also a certain bacterial knowledge. This plan seems at present inapplicable to tuberculous affections but considering the multitudinous clinical and pathological manifestations of tuberculous disease we think that ultimately some such differentiation of strain will have to be carried out in preparing a special tuberculin for each group of patients or possibly for each patient. So far the difficulties of obtaining a pure culture of the special strain of tubercle bacillus have prevented us from carrying out our investigations on these lines. To this cause we attribute our want of success in the treatment of some of the tuberculous bone affections—e.g., Cases 3, 22, and 23—and to us one of the undoubted causes of failure seems to be the fact that Koch's new tuberculin (TR) as supplied has been used indiscriminately for multitudinous affections caused possibly by varying strains of the tubercle bacillus. If this were not the case how can it be explained that patients may have localised lupus or caries for years, possibly half a lifetime, without developing internal tubercle and that clinically tuberculous infections are classified as lung tubercle, brain tubercle, serous membrane tubercle, &c., each pursuing a more or less definite course and not necessarily leading one to the other.

In isolating the causal germ it soon became obvious that there might be more than one present, the tubercle bacillus, for example, being associated with staphylococci, pneumococci, &c. Tuberculous skin affections have almost necessarily a secondary affection of pus forming organisms, as was found in both cases of lupus here recorded. In Case 7 (lupus with extensive suppuration) the tuberculous opsonic index was 0·45, and the staphylococcic opsonic index 0·65; although this patient was not injected with any staphylococcic vaccine the staphylococcic opsonic index rose to normal and remained normal as soon as the tuberculous opsonic index arrived at, and was maintained above, the normal line, thus indicating that the staphylococcic infection was purely secondary, resulting from the presence of a suitable nidus. Similarly pulmonary tuberculous affections are subject to superimposed infection and the difficulty here is to estimate the amount of damage due to the secondary organisms. In Case 14 (chronic pulmonary tuberculosis) the pneumococcic opsonic index was 0·8 and a greater improvement was noticeable on the injection of a pneumococcic vaccine, and the raising of the pneumococcic opsonic index to 1·5.

In advanced cases of pulmonary tuberculosis the invading organisms may be multiple, consequently useful therapeutic measures may be difficult to apply; for instance, in Case 2 the staphylococcic opsonic index was found to be 1·25, indicating that she was at that time also fighting a staphylococcic invasion. As the result of staphylococcic injections the staphylococcic opsonic index was raised to 1·66. The ingrafting of other organisms on the tubercle bacillus is well illustrated by Case 9, in which after six weeks' drainage of a tuberculous kidney she was treated with tuberculin; again, six weeks later, a staphylococcus albus having been found in the discharge and the sinuses not healing, she was treated with a vaccine of this organism, which vaccine raised the staphylococcic opsonic index from 1·15 to 1·5. After these injections, combined with the tuberculin, healing became more rapid and finally complete.

The possibility of the association of the tubercle bacillus with the bacillus coli communis in intestinal conditions is illustrated by Case 25, in which an apparently tuberculous mass to the right of the umbilicus yielded slowly to tuberculin but much more rapidly to a combined injection of tuberculin and a vaccine of the bacillus coli. In support of this view the bacillus coli opsonic index was before injection 1·0; subsequently it reached 1·4 coincidently with the clinical improvement.

It is difficult to say in any one case how often the injections should be repeated, because acute infections differ very greatly from chronic ones. A bacillus coli infection may be fatal in a few days or even hours; acute general tuberculosis in a few weeks; on the other hand, a case of chronic pulmonary tuberculosis or furunculosis may drag on for years. The only safe guide seems to be to inject as soon as the index, when once raised, shows signs of falling. We have found it advisable to inject a case of acute pulmonary tuberculosis at intervals of about five days with marked benefit, and a case of bacillus coli peritonitis even more frequently with gratifying success.

So far as we can judge each case is a law unto itself, both as to dosage and also as to frequency of repetition; the only guidance is obtained by frequent estimations of the opsonic index and a careful study of the opsonic chart. Our plan has been to treat each case on its merits, usually beginning with a small dose, watching the behaviour of the index, and continuing this dose, increasing or diminishing it as the occasion seems to demand. In the more acute cases the negative phase seemed to be either entirely absent or of very short duration, the opsonic index taken after the first 24 hours showing a marked rise compared to the height on injection.

We have had no ill-effects from any injection, no abscesses, no rigors, and no rash; in a few cases only a feeling of malaise for about 24 hours.

Prophylaxis.—It seems to us that there is a distinct future for those cases apparently threatened with tuberculosis by environment, contiguity, and possibly heredity, by the injections of bacterial vaccines. We have had one such case in a member of a family with marked tuberculous history; his sister at the time was under this treatment. He had no physical signs but there were definite loss of weight, cough, and night sweats. There were no tubercle bacilli in the sputum. The tuberculous opsonic index was 0·97, raised by injection to 1·54 with accompanying improvement in general health and increase of weight. We have had no experience of prophylactic injections against the bacillus coli; this appears seldom possible in the emergencies of private practice.

Failures.—We have failed to do any good in the following four cases.

CASE 1.—The patient, a male, aged 33 years, was seen with Dr. W. A. Bryant of Hull. He suffered from advanced

pulmonary tuberculosis with right empyema; an operation was performed during which he nearly died. The tuberculous opsonic index three days after the operation was 0·87. He was injected three days later with $\frac{1}{1000}$th of a milligramme of tuberculin (TR) when the tuberculous opsonic index was 1·02. 24 hours later it was 0·71 and after 48 hours it was 1·46. Death occurred 44 days after injection. With our present knowledge we should hesitate to inject in a similar case.

CASE 2.—A female, aged 16 years. There was advanced pulmonary tuberculosis of four years' duration. There were a cavity at the left apex and consolidation of the remainder of that lung, with subsequent formation of empyema, for which operative measures were declined and consequently treatment was discontinued. The tuberculous opsonic index before treatment was 0·85 and two days later it was 1·04, the highest point reached under treatment being 1·6. With the formation of the empyema the tuberculous opsonic index fell to 0·93. Treatment was continued for ten weeks and the weight increased four pounds. The number of opsonic estimations being 19 and the number of injections seven. The case is now *in statu quo*.

CASE 3.—A male, aged 36 years. This was an almost hopeless case of hip and spinal disease dating from boyhood; there were multiple sinuses. The tuberculous opsonic index before treatment was 0·98 and the highest point reached under treatment was 1·7. The discharge from the sinuses contained staphylococcus pyogenes albus, the index for which was 1·19, rising after injections to 1·65. Some improvement took place, with a gain in weight of four pounds, but later there was a relapse, with the formation of an intrapelvic abscess. The duration of treatment was 16 weeks. The tuberculin injections numbered 11 and the staphylococcic injections seven, while the opsonic estimations were 34. The case is now practically *in statu quo*.

CASE 4.—A female, aged six years, under the care of Dr. J. Savege of Hull. This was a case of tuberculous meningitis, following on gland of the neck, of the duration of one week. The tuberculous opsonic index was 1·19. The patient was injected with $\frac{1}{1000}$th of a milligramme of tuberculin (TR). There were some diminution of headache and slight improvement in the mental condition, followed by convulsions and sudden death five days later. Curiously, the gland disappeared before death.

Bacillus coli infections:—

CASE 5.—A male, aged 48 years, under the care of Dr. T. de Carle Jackson of Hull had been ill for three weeks with acute abdominal pain at intervals, sickness and rigors, swelling in the epigastrium, and gradual loss of flesh. No plasmodia malariæ were found. The patient was operated upon under the impression that he had some pancreatic affection; the pancreas was found to be normal but two large gall-stones were removed from the gall-bladder. There was no improvement after operation; the rigors continued and there was a gradual loss of all subcutaneous fat. There was no abdominal distension but the patient appeared seriously septic without actual pus formation. He was sent home to die. The gall-bladder secretion was examined and a pure culture of bacillus coli communis was obtained. No blood culture was made. The bacillus coli opsonic index before injection was 0·93. The injection of 500,000,000 of bacillus coli vaccine produced improvement and raised the index to 1·14. Three days later the last rigor took place. Two subsequent injections were given and the bacillus coli opsonic index rose to 1·68. In four weeks the patient was quite well. (Fig. 1.)

CASE 6.—A male, aged 28 years, under the care of Dr. Bryant. The patient had a sudden attack of abdominal pain followed by development of acute general peritonitis. He was operated upon on the fourth day, the cause of the peritonitis being obscure. An abscess in the pelvis was simply drained, no attempt being made to wash out the peritoneal cavity; in fact, it was impossible on account of adhesions. From a culture of the pus the bacillus coli communis was obtained and a vaccine was made. The index for this organism was 0·8, 48 hours after operation; the opsonic index of the blood taken at the time of the operation, for a laboratory culture of bacillus coli, was 1·13. An injection of 500,000,000 of his own vaccine was made three days after the operation with some improvement in the condition of the patient and a rise of the index to 1·22. Four subsequent injections were made and the highest index reached was 1·79. (Fig. 2.) There was a noticeable drop of the index on the thirteenth day after the operation; this was found to be due to retained pus in the pelvis; with the evacuation of the pus the index rose in 24 hours to 1·17. The patient has now no abdominal symptoms but there is decided thickening in the region of the appendix. The wound is almost healed (five weeks after operation).

These are the only cases of bacillus coli infection which we have treated, but they seem to us worthy of record, as we feel certain that but for the injection of the vaccine they would both have died. Case 5 seems to us to be an example of bacillus coli septicæmia.

Tuberculous Infections—1. Tuberculosis of the skin.

CASE 7.—The patient, a male, aged ten years, was sent by Dr. E. Harrison of Hull. There was extensive lupus of the face and the limbs (in all 34 separate patches) with partial destruction of one ear. Tubercle bacilli were found in the scrapings. All previous treatment had been useless in arresting the disease. The tuberculous opsonic index before treatment was 0·45 and the highest point reached during treatment was 1·75. There was a secondary infection of staphylococcus pyogenes aureus, the opsonic index of which rose from 0·65 to normal coincidently with the improvement due to tuberculin injections. All the patches on the face are healed and those on the limbs are nearly cured. The duration of treatment has been 28 weeks and the patient is still under treatment. Number of tuberculin injections 20; tuberculous opsonic estimations, 40; and staphylococcic estimations, 5.

CASE 8.—The patient, a male, aged 10 years, was sent by Dr. A. McC. Erskine of Goole. There was extensive lupus of eight years' duration. The right ear was nearly destroyed and the nose partially so. There was extensive ulceration of the palate, the upper lip, and the cheeks. There were a large patch six inches in circumference on the back of the right thigh and a large patch on the left foot extending over the great and second toes. Tubercle bacilli were found. Several previous operations more or less successful had been followed by fresh infection. The tuberculous opsonic index, which before treatment had been 0·9, was raised to a maximum of 1·7 under treatment. The right ear and the left foot healed, the patch on the thigh nearly healed, and the nose and palate rapidly improved. There was no fresh infection. Number of tuberculin injections, 13; opsonic estimations, 16; duration of treatment, 18 weeks. The case is still under treatment.

Both these cases of lupus seem to us to have improved much more rapidly than we should have expected under any other form of treatment; the rapid improvement in general health after a few injections was most marked. In each case the previous treatment had been of a varied character.

2. *Tuberculous disease of the kidneys.*

CASE 9.—A female, aged 21 years. There was a history of pyuria of two years' duration. 13 years ago the patient had undergone excision of the right hip-joint (performed by one of us, A. P.) for tuberculous disease. The right kidney, which was much enlarged, was painful. There was a hectic temperature. The kidney was opened vertically and many large caseous foci were scraped out. The kidney was drained. Tubercle bacilli were discovered in the urine. Two months later, as the general condition of the patient was not satisfactory, the tuberculin treatment was commenced. The tuberculous opsonic index was 0·9; it was raised to a maximum of 1·6 under treatment. The staphylococcus pyogenes albus was found in the discharge from the sinus and the index for this organism was raised from normal to 1·4. There followed marked improvement in the general health, the closing of the sinus, and an increase in weight of seven pounds. The duration of treatment was 16 weeks. Number of tuberculin injections, 10; staphylococcic injections, 5; tuberculous opsonic estimations, 26; and staphylococcic estimations, 7.

CASE 10.—A male, aged 15 years. There was a history of wasting and pyuria extending over two and a half years. There were tubercle bacilli in the urine. The right kidney was enlarged and tender. The tuberculous opsonic index before treatment was 1·13; it was raised by injections to a maximum of 1·83. Number of tuberculin injections, 7; and opsonic estimations, 10. The case has been under treatment for ten weeks and is still under treatment. The kidney is now scarcely palpable, there is only a trace of pus in the urine, and tubercle bacilli are very difficult to find. A marked improvement in the general health has taken place and an increase in weight of three and a half pounds.

In Case 9 the disease was so extensive that a nephrectomy

FIG. 1.

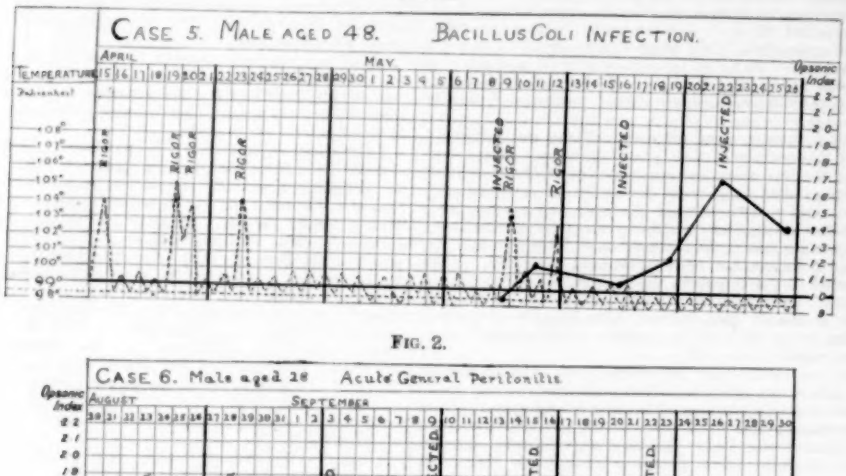


FIG. 2.

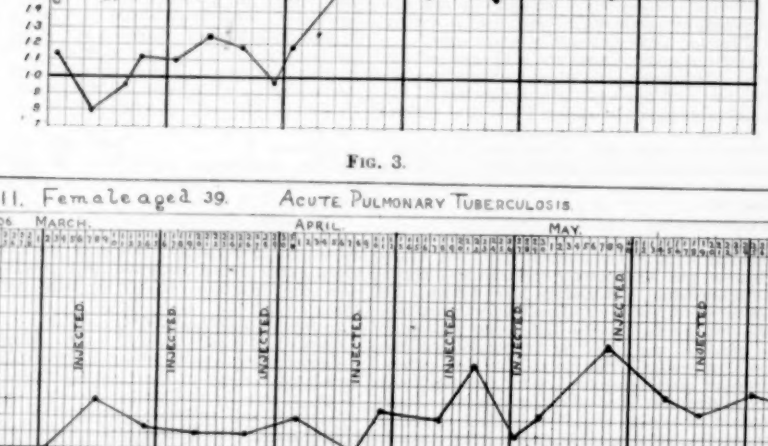


FIG. 3.

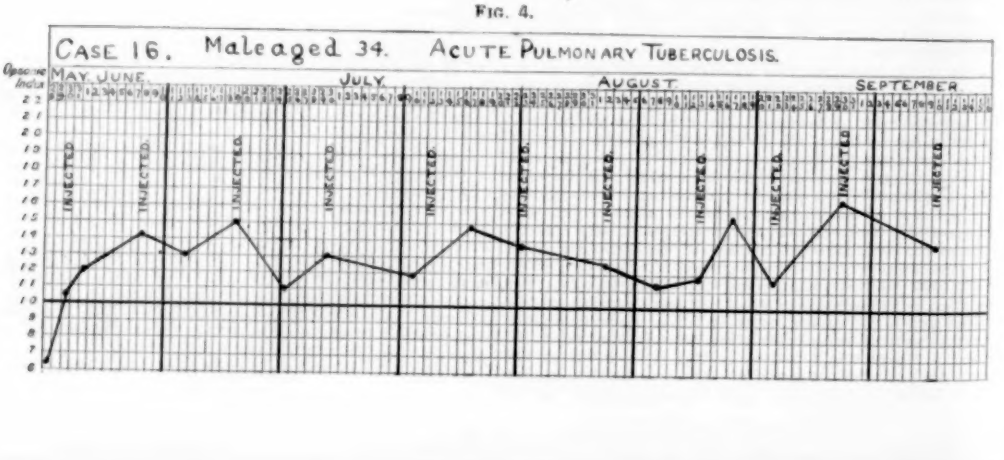


FIG. 4.

seemed impossible; in Case 10 it has not so far been required on account of the success of this treatment.

3. *Pulmonary tuberculosis.*

CASE 11.—The patient was a female, aged 39 years, under the care of Dr. A. T. Brand of Driffield. There was a history of cough of six months' duration, with failing health and loss of weight. The patient was confined to bed and had a hectic temperature. There were signs of consolidation at the right apex. Tubercle bacilli were found in the sputum. The tuberculous opsonic index, which before treatment was 0·75, was raised to a maximum of 1·63. The number of the tuberculin injections was 10 and the opsonic estimations were 22. Duration of treatment four months. There is now no cough or expectoration and there is an increase in weight of 19 pounds. The physical signs are negative. The patient has resumed her ordinary duties and considers herself cured. (Fig. 3.)

CASE 12.—The patient, a male, aged 27 years, was under the care of Dr. Angus Fairweather of Pocklington, had had failing health and had lost nine pounds in weight during the previous six months. There were hæmorrhagic sputum, dulness and râles at the right apex, and a caseous gland with a sinus at the right side of the neck. The tuberculous opsonic index before treatment was 0·82; it was raised by injection to a maximum of 1·55. The staphylococcic index was 1. Number of tuberculin injections, 5; and opsonic estimations, 11. Duration of treatment seven weeks. The patient gained in weight 13 pounds. The gland disappeared, the sinus healed, and the physical signs became negative. The patient says that he has never felt in better health.

CASE 13.—The patient, a male, aged 44 years, was seen with Dr. J. B. Close of Hull. There was a history of cough and blood-stained sputum extending over six months. The loss in weight had been nine pounds. Tubercle bacilli were found in the sputum. On two occasions there had been severe hæmoptysis. There were signs of extensive consolidation at the left apex and in a less degree at the right. The tuberculous opsonic index before treatment was 0·62; the highest point reached under treatment was 1·74. Number of tuberculin injections, 13; and opsonic estimations, 19. Duration of treatment six months. The abnormal physical signs have disappeared and tubercle bacilli have not been found in the sputum in the last six examinations. There has been an increase in weight of 16½ pounds and the patient has been at work for the last three months.

CASE 14.—The patient, a male, aged 41 years, was sent by Dr. Harrison. There had been long-standing pulmonary tuberculosis with recrudescence during the last seven months, during which the loss of weight had been four pounds. There were signs of consolidation and of a cavity at the left apex. Tubercle bacilli were found in the sputum. The tuberculous opsonic index, which before treatment had been 1·39 and 1·37, rose under treatment to 1·9. The pneumococcic opsonic index was 0·8, rising to 1·4 after injections of a pneumococcic vaccine. Tuberculin injections, 14; pneumococcic injections, four; and opsonic estimations, 26. Duration of treatment five months. The patient's weight is stationary at 11 stones. Improvement is shown in the general health but there are still a few râles at the left apex. No tubercle bacilli have been found in the last six examinations of the sputum.

CASE 15.—The patient, a male, aged 31 years, was sent by Mr. E. H. Howlett with a history of cough and loss of weight during the preceding 12 months. Improvement was made under three months' sanatorium treatment but later a relapse took place. There were signs of consolidation of the left upper lobe. Tubercle bacilli were found in the sputum. The tuberculous opsonic index taken on two occasions before treatment had been 0·84 and 0·85; it was raised by injection to 1·64 and has been maintained above the normal for the past three months. Number of tuberculin injections, 21; and opsonic estimations, 44. The weight has increased from 13 stones 10 pounds to 14 stones 4 pounds during six months' treatment and is now stationary. There are still a few râles at the left apex and occasionally tubercle bacilli are discovered in the sputum. The patient is still under treatment.

CASE 16.—The patient, a male, aged 34 years, was sent by Dr. F. N. Stewart. There was a history of cough and expectoration which had lasted for nine months. There had been failing health and loss of weight. There was consolidation of the left apex and tubercle bacilli were found in the sputum. The tuberculous opsonic index before injection had been 0·65 and 1·05; it was raised by injection to a maximum of 1·64. This index has not fallen below 1·15 since the treatment was commenced. Number of tuberculin injections, 13; and opsonic estimations, 18. Duration of treatment 15 weeks. There is still some dulness at the left apex; tubular breathing is no longer heard but there are occasional râles. There has been a gain in weight of eleven and a half pounds. Active disease has apparently been arrested but there are still tubercle bacilli in the sputum. (Fig. 4.)

The results of these cases of pulmonary tuberculosis are distinctly gratifying, more especially as there was no other concurrent treatment and as many of the patients were able to continue their usual avocations throughout. It appears that the more chronic the case, the more likely is the tuberculous opsonic index at the initial examinations to be below normal, whereas in the acute cases the opsonic index is either high or low, representing fluctuations in immunising power. In the acute cases it seems more difficult to maintain a constant high level of opsonic power, on account of the interference by reaction to the toxins periodically absorbed into the blood stream. Both acute and chronic cases have benefited by the treatment, but it is obviously difficult to say in any one case when an absolute cure has been attained.

4. *Tuberculous glands.*

CASE 17.—The patient was a male, aged six years. There were multiple enlarged glands on both sides of the neck, recurrent after operation ten months before. This was practically an old case of scrofula. It was pronounced to be inoperable. Several of the glands were fluctuating; these were simply opened (without scraping) during the course of treatment. The tuberculous opsonic index before injection was 1; the highest point reached under treatment was 1·4. Number of tuberculin injections 7; and opsonic estimations, 11. Duration of treatment 13 weeks. All the glands have disappeared and all the wounds have healed. The general health is greatly improved.

CASE 18.—The patient, a female, aged 17 years, was sent by Dr. H. D. Johns of Hornsea. There was a large breaking-down mass of glands of the size of an orange at the right angle of the jaw. She refused operation. Aspiration was resorted to and tubercle bacilli were found in the pus. The tuberculous opsonic index before treatment was 1·1 and the opsonic index of the serum from the pus was 0·7. A drainage-tube was inserted under ethyl chloride. The opsonic index rose under treatment to 1·65. Number of tuberculin injections, 12; and opsonic estimations, 13. Duration of treatment 18 weeks. A small lump of the size of a hazel nut is still present; the sinus is closed; and the general health is much improved.

CASE 19.—The patient was a female, aged 43 years, who was sent by Dr. W. Murray of Hessle. There was a history of enlarged glands of the neck and the axilla of four years' duration. Two extensive operations involving partial removal of the right pectoral muscle had been performed. There was recurrence on both sides of the neck and the case was pronounced to be inoperable. There were œdema of the right arm down to the fingers, multiple matted glands on both sides of the neck, lymphatic enlargement of the left axilla, an enlarged spleen, and internal to this there was a mass of glands in front of the spine. The tuberculous opsonic index before treatment was 0·95; the highest point reached under injection was 1·5. Number of tuberculin injections, 15; and opsonic estimations, 16. Duration of treatment five months. There are four or five small isolated glands in the left posterior triangle, which could now be easily removed, and a hard gland in the left axilla; the rest have disappeared. The spleen and the mass over the spine are no longer palpable but there is still some œdema of the arm and forearm. The general health is excellent. The case is still under treatment.

CASE 20.—A female, aged four years, under the care of Dr. C. H. Milburn, had multiple glands on both sides of the neck with much matting together for 18 months. The largest gland on the left side was of the size of a walnut. The tuberculous opsonic index before treatment was 0·9 and 1·13; the highest point reached after injections was 1·59. Number of tuberculin injections, 8; and opsonic estimations, 12. The largest gland broke down and had to be incised. Duration of treatment, 13 weeks. The glands on both sides have almost disappeared and the sinus has healed.

CASE 21.—A female, aged 21 years, had had for five months a mass of glands in the right posterior triangle with considerable matting together and extending beneath the

sterno-mastoid and trapezius. The tuberculous opsonic index before treatment was 0·76 and the highest point reached after injection was 1·45. Number of tuberculin injections, 7; and opsonic estimations, 10. The case is still under treatment. The glands are much more discrete, smaller, and harder.

Tuberculous glands are obviously amenable to this treatment, but whether their complete absorption when once caseous is possible seems doubtful. The periadenitis first subsides, then the capsule of the gland becomes thinner, but the caseous centre remains and may require removal. We have proved this by removing or incising glands at various stages of the treatment purely for the purposes of this investigation. Case 21 suggests the advantage of this treatment for tuberculous mediastinal and abdominal glands otherwise inaccessible.

5. *Tuberculous bone disease.*

CASE 22.—The patient, a male, aged 46 years, was under treatment for 18 weeks. Number of tuberculin injections, 12. The sinus is *in statu quo*, but the general health has much improved.

CASE 24.—The patient, a male, aged 22 years, was sent by Dr. Harrison. He suffered from tuberculous disease of the right elbow. The first operation had been performed 16 years ago and the case had been treated by excision two and a half years ago. An abscess was opened on March 20th and tuberculin treatment was commenced one month later. There was great thickening round the elbow-joint and a sinus which was almost closed. The tuberculous opsonic index, which before treatment was 0·9, rose after injections to 1·65. Number of tuberculin injections, 12; and opsonic estimations, 21. The sinus has healed completely, all thickening around the elbow has disappeared, and the general health is excellent. The case was under

FIG. 5.

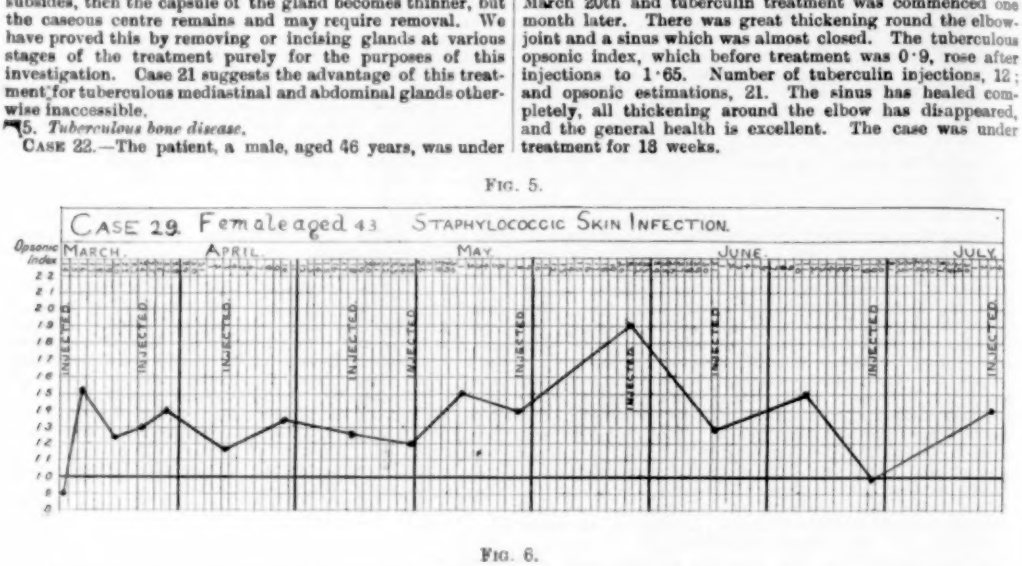
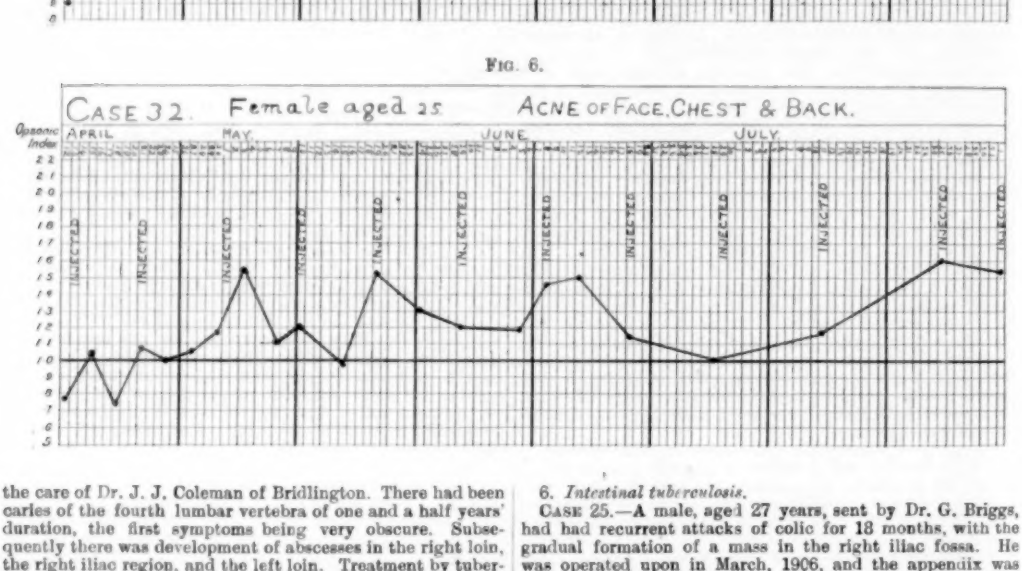


FIG. 6.



the care of Dr. J. J. Coleman of Bridlington. There had been caries of the fourth lumbar vertebra of one and a half years' duration, the first symptoms being very obscure. Subsequently there was development of abscesses in the right loin, the right iliac region, and the left loin. Treatment by tuberculin commenced eight months after the last operation. The tuberculous opsonic index before injection was 0·71; it was raised under treatment to a maximum of 1·64. Number of tuberculin injections, 13; and opsonic estimations, 24. The staphylococcus pyogenes albus was cultivated from the pus; the opsonic index for this organism was 1·15 and it was raised by injection to 1·41. Duration of treatment six months. The patient has much improved in general health and appearance; two sinuses have healed and there is now very little discharge from the third.

CASE 23.—A male, aged 11 years. This was a case of old laminectomy for cervical caries and paraplegia five years before. The result had been eminently satisfactory, but the patient had a sinus on the right side of the neck in the posterior triangle. Treatment was directed to the cure of the sinus. The tuberculous opsonic index before injection was 1·1; the highest point reached under treatment was 1·5.

6. *Intestinal tuberculosis.*

CASE 25.—A male, aged 27 years, sent by Dr. G. Briggs, had had recurrent attacks of colic for 18 months, with the gradual formation of a mass in the right iliac fossa. He was operated upon in March, 1906, and the appendix was found to be healthy, the mass being thought to be tuberculous, and the abdomen was closed. Opsonic treatment was commenced five months later, the mass then being as large as a duck's egg. The tuberculous opsonic index taken on two occasions had been 0·96 and 0·98; this was raised by injection to a maximum of 1·7. The bacillus coli opsonic index five weeks later was 0·7 and a vaccine of this organism raised the index to 1·4 with much more rapid improvement. Number of tuberculin injections, 13; bacillus coli injections, 8; and opsonic estimations, 29. The case is still under treatment. The mass is about one-third of its former size and is much more moveable. Attacks of pain are experienced at very rare intervals and then they are only slight. The patient has returned to his work.

CASE 26.—The patient, a male, aged 18 years, was sent by Dr. Harrison. An appendicular abscess had been opened

and drained 11 months ago; a sinus persisted and a fæcal fistula formed. Seven months later there were acute epigastric pain, abdominal distension, and rise of temperature. Diaphragmatic pleurisy was diagnosed. Four months later there was more epigastric pain and the diaphragm was almost fixed. There were adhesions between the stomach, the spleen, and the diaphragm, which were separated by operation, and a fæcal fistula which passed down to the appendix was closed. Subsequently there was a daily rise of temperature to 103° F., with rigors. There were suspicious physical signs in the chest but no tubercle bacilli were found in the scanty sputum. The condition was desperate and was thought to be tuberculous. The tuberculous opsonic index taken on two occasions was 1·27 and 1·31. The highest point reached after injection was 1·68. Number of tuberculin injections, 12; and opsonic estimations, 23. Duration of treatment five months. Except for very occasional slight diaphragmatic pain, the patient is now quite well and at work. There has been an increase in weight of 23 pounds.

The patients in the last two cases were in a desperate condition when the treatment was commenced and the success attained is very gratifying.

Staphylococcic affections.

CASE 27.—A surgeon, aged 41 years, had had frequent infections on the hands, the wrists, and once on the knee by inoculation of hair follicles without any open wound. These inoculations were followed by various septic conditions, on two occasions endangering life and surgical work had almost to be relinquished. Susceptibility to staphylococcus invasion was established and at the suggestion of Sir A. E. Wright the corresponding vaccine was injected. By means of regular injections the index has been maintained above normal (1·2 to 1·3) for some months. The patient reports that he has had no serious infection for the last nine months, is in excellent health although in constant work, and is able to continue his surgical work without fear of being laid up.

CASE 28.—A medical man, aged 38 years, had a carbuncle on the left buttock for ten days, followed by an inflamed papule beneath the left ear. The staphylococcic opsonic index before treatment was 0·6; after the first injection it rose to 1·42. The carbuncle began to clear up and the papule below the ear, which had suppurated, became quite localised, the surrounding cellulitis becoming circumscribed. The opsonic index fell to 0·9 and there was a rapid increase in the cellulitis below the ear with formation of a slough. After two more injections this cellulitis became circumscribed. A third infection arose over the second dorsal spine but the opsonic index being now kept above 1·2 this infection did not cause the least cellulitis, nor was it at all painful but aborted in about three or four days. The patient has since been quite well. Number of staphylococcic injections, 5; and opsonic estimations, 12. The case was under treatment for five weeks.

CASE 29.—A female, aged 43 years, had been under ordinary treatment for five months for multiple recurring papules, becoming pustular with subsequent formation of granulomatous patches on the wrists, the forearms, and the front of the legs. The patches on the legs at one time formed large plaques several inches in circumference. The patient was treated for scabies and syphilis without benefit. All other treatment was unavailing. A staphylococcus pyogenes albus was isolated and the staphylococcic opsonic index was found to be 0·9; this was raised by injections to 1·9. Number of injections given, 14; and opsonic estimations, 12. Duration of treatment, three months. All patches are cured but if there is any recurrence a single injection clears it up. (Fig. 5.)

The result of the treatment in this case of staphylococcic skin infection suggests to us that there is room for a modernised system of nomenclature of skin diseases, one division of which would contain the diseases due to micro-organisms. The present system of differentiation largely by means of the discoverer's name is so chaotic as to be hopeless.

CASE 30.—The patient, a male, aged 39 years, had had sycosis of the whole of the beard of six months' duration. Various forms of medical treatment were tried with very slight benefit. Staphylococcus pyogenes aureus was cultivated from pus. Staphylococcic opsonic index before treatment, 0·9; highest point reached as the result of injection, 1·58. Number of injections, 12; opsonic estimations, 11. Duration of treatment four months. The patient is now cured, but we admit the possibility of a re-infection.

The result of this form of treatment in such cases contrasts very favourably with that obtained by other means; it leaves no scar as frequently happens after treatment by the x rays.

CASE 31.—The patient, a female, aged 44 years, had had pustular eruption on the nose, cheeks, and chin of many years' duration. All previous treatment had been of little avail. Staphylococcus pyogenes albus was cultivated from pus, the index for which organism was 1·07 before treatment. The index was raised as the result of treatment to 1·46. Number of injections, 10; and opsonic estimations, 9. Duration of treatment 16 weeks. There is still some erythema of the affected parts but there are no more pustules.

CASE 32.—The patient, a female, aged 25 years, was sent by Dr. Stewart. She had very severe and extensive pustular acne of the face, neck, chest, and back of 15 years' duration. All previous treatment had been ineffectual. Staphylococcus pyogenes albus was isolated from the pus. The staphylococcic opsonic index before treatment, 0·77; highest point reached under treatment, 1·64. Number of staphylococcic injections, 14; and opsonic estimations, 21. Duration of treatment 22 weeks. The chest and back are clear of pustules, but still a few pustules form on the face though in gradually diminishing numbers. It is interesting to note that this patient was treated with a stock vaccine made of various cultures of staphylococci with but little benefit and it was only after she was treated with a vaccine made from a culture of her own particular organism that real improvement began. (Fig. 6.)

CASE 33.—The patient, a male, aged 23 years, was a patient under the care of Dr. Watson of Cottingham. There had been pustular acne of the face and back of seven years' duration, rendering shaving impossible. The staphylococcic index before treatment was 0·88, rising after injection to a maximum of 1·6. Number of injections given, 10; and opsonic estimations, 11. Duration of treatment 13 weeks. The patient is now completely cured. It is interesting to note that the patient had patches of psoriasis on both elbows and knees which were unaffected by the treatment.

CASE 34.—The patient was a male, aged 26 years. An estimation of the staphylococcic opsonic index was taken with others for experimental purposes and was found to be 0·73. At the time it was stated that he was susceptible to staphylococcic infection. Just a month later he presented himself with several large pustules on the face. His staphylococcic opsonic index was then 0·86. By means of injections the index was raised to 1·38, with rapid disappearance of the pustules and marked improvement in general health. A subsequent slight recurrence promptly yielded to the same treatment.

General remarks on the series of cases.—On the whole we are extremely pleased with the results we have obtained by this mode of treatment. It necessarily entails a very great amount of work and expenditure of time by the bacteriologist but this results in the obtaining of information of the greatest value to the physician or surgeon actually in charge of the patient. We have not used the injections in any haphazard sort of way, but only after careful estimation of the result of each injection at the beginning of the treatment. Later, when we have seen from a study of the opsonic chart how long the result of each injection lasts—what we might term the periodicity or opsonic wave—then the estimations can be made less frequently and the injections continued with certainty.

The amount of benefit derived from the treatment has varied in each case and we do not claim to have cured every patient. It is difficult to generalise in so many distinct and widely differing affections. Broadly speaking, acute cases are the more difficult to cure, because there may not be time enough to raise the opsonic power to such a degree as to influence the course of the disease; and at present we do not know much about the proper dosage necessary to do the greatest amount of good without doing evil—i.e., producing a dangerous negative phase. Nor do we profess to be able to cure a case of 15 years chronicity in a like number of weeks.

We think there is a great future for this treatment, if properly applied, for which great honour is due to Sir A. E. Wright. Our success, particularly in the two cases of bacillus coli communis infection, supports our opinion that this mode of treatment is capable of great expansion to

other bacterial diseases and we hope to have an opportunity in the future of reporting further results.

It is obviously impossible to reproduce the charts we have prepared of every case; we have selected what appeared to be the most interesting.

THE DETECTION OF SUGAR IN URINE AND ITS SIGNIFICANCE IN CONNEXION WITH LIFE ASSURANCE.

By A. M. KELLAS, PH.D., B.SC.,
LECTURER ON CHEMISTRY IN THE MIDDLESEX HOSPITAL MEDICAL SCHOOL;
AND
FRANK J. WETHERED, M.D. LOND., F.R.C.P. LOND.,
PHYSICIAN TO THE HOSPITAL FOR CONSUMPTION, BROMPTON; AND ASSISTANT PHYSICIAN TO THE MIDDLESEX HOSPITAL.
(*From the Laboratories of the Middlesex Hospital.*)

(*Concluded from p. 1064.*)

(2) *Creatine* ($C_4H_9N_3O_2$).—A set of experiments were carried out with creatine dissolved in distilled water similar to those with creatinine. Folin[1] has recently proved that creatine may be present in quantity in normal urine. 0·232 gramme of creatine was dissolved in 20 cubic centimetres of distilled water = 11·6 milligrammes of creatine per cubic centimetre. This weight was chosen as being equivalent chemically to 10 milligrammes of creatinine per cubic centimetre as used in previous experiments.

TABLE XVI.

(*a*) 11·6 milligrammes of creatine per cubic centimetre.

Percentage of grape sugar.	Aqueous solution; phenomena observed.
None present.	No apparent change, but on boiling for a few minutes the solution turned light blue. On standing for a few days reversion to original colour took place.
0·1	No apparent change. On boiling for a few minutes the solution turned green.
0·25	A green precipitate started forming in 35 seconds. Turned yellow on standing.
0·5	A green precipitate started forming in 10 seconds. Turned red in a few seconds.

(*b*) 5·8 milligrammes of creatine per cubic centimetre = 5 milligrammes of creatinine per cubic centimetre.

None present.	No apparent reaction. The solution remained blue.
0·1	Slowly turned light blue and in two minutes a faint bluish-green precipitate formed, which was distinct in four minutes.
0·25	In ten seconds a thick precipitate formed rapidly.
0·5	In two seconds a red precipitate formed rapidly.

(*c*) 2·9 milligrammes of creatine per cubic centimetre = 2·5 milligrammes of creatinine per cubic centimetre.

None present.	No apparent reaction. The solution remained blue.
0·1	A faint opalescence in one and a half minutes, which steadily increased; green turbidity in two minutes. A bright green precipitate on standing.
0·25	In five seconds a yellow precipitate came down, which rapidly turned red.
0·5	In one and a half seconds a red precipitate formed.

Comparing the above results with those obtained with the corresponding weights of creatinine, as recorded in Tables XIV., XIV. A, and XIV. B, it is readily seen that the inhibiting effect of creatine is much less than is that of creatinine. 2·5 milligrammes of creatinine per cubic centimetre prevent precipitation when 0·1 per cent. of grape sugar is added, whereas the equivalent quantity of creatine —2·9 milligrammes per cubic centimetre—does not do so. The other values correspond. When a precipitate forms with creatine present the time required is usually considerably less than when the corresponding quantity of creatinine is the inhibiting factor.

A few experiments were next carried out to see whether a mixture of creatinine with creatine would behave exactly as one would expect from the results given in Tables XIV. and XV., or whether they would influence each other in any way.

[1] Zeitschrift für Physiologische Chemie, 1904, Band xli., pp. 223–242.

TABLE XVII.

Percentage of sugar.	Aqueous solution containing 5 milligrammes of creatinine and 5·8 milligrammes of creatine per cubic centimetre. Result of boiling with an equal volume of Fehling's solution.
0·25	Turned light blue and then green and in five minutes a faint green precipitate came down.
0·5	In 30 seconds a green precipitate separated, which changed to yellow.

TABLE XVII. A.

Percentage of sugar.	Aqueous solution containing 2·5 milligrammes of creatinine and 2·9 milligrammes of creatine per cubic centimetre. Result of boiling with an equal volume of Fehling's solution.
0·1	No precipitate in four hours.
0·25	In 30 seconds a green precipitate began to come down, which gradually changed to yellow.

The above results indicate, as was to be expected from the preceding experiments as recorded in Tables XIV. and XV., that creatinine is the more important retarding factor of the two; in fact, the results are very similar to those of Tables XIV. A. and XIV. B.

(3) *Uric acid* ($C_5H_4N_4O_3$) *and urates.*—Since, according to the late Sir W. Roberts,[2] the urates present in normal urine consist entirely of quadriurates of sodium, potassium, and ammonium, experiments were chiefly carried out with ammonium quadriurate and sodium urate, but a few comparison experiments were also made with uric acid.

Preliminary experiments.—1. (*a*) Water was saturated with ammonium quadriurate: (1) at 15°, (2) at 40°, and (3) at 60° C., by digesting for over four hours at the temperatures named. In each case on boiling two cubic centimetres with two cubic centimetres of Fehling's solution a slight red precipitate formed in a few minutes. (*b*) Urine (specific gravity 1014) was saturated with ammonium quadriurate by digesting for four hours: (1) at 40° and (2) at 60° C. On boiling two cubic centimetres with two cubic centimetres of Fehling's solution no red precipitate formed, but after standing for some time a white precipitate, which might have been cuprous urate or phosphates, settled.

2. An analogous series of experiments carried out with sodium urate solution and with urine saturated with sodium urate at 15°, 40°, and 60° C. gave similar results, a red precipitate forming in less than three minutes with the aqueous solution, and no precipitate forming with the urine. The precipitates from the aqueous solution in this case formed more readily than in the case of the similar solutions containing ammonium quadriurate.

The above results, which agree with those of MacLean,[3] might be due either to the quantity of urate in aqueous solution being much greater than that present in urine (Roberts emphasises the comparative insolubility of urates, when sodium salts like the chloride are present) or to the creatinine, &c., exerting an inhibiting influence, or to both these factors.

In order to determine whether the quantity in aqueous solution was much greater than that present in urine, a few quantitative determinations of uric acid in moderately concentrated samples of urine (specific gravity 1025) were carried out by the Fokker-Salkowski process as modified by Hopkins with the following results:—

TABLE XVIII.

Temperature of saturation (Centigrade).	Nature of solution.	Weight per 1000 cubic centimetres calculated as uric acid.
15°	Sodium urate in distilled water.	0·9 gramme.
40°	Ditto.	1·6 grammes.
15°	Sodium urate in urine.	0·9 gramme.
40°	Ditto.	1·05 grammes.
15°	Ammonium quadriurate in distilled water.	0·49 gramme.*
40°	Ditto.	0·82 ,, *
15°	Ammonium quadriurate in urine.	0·85 ,,
40°	Ditto.	1·0 ,,

* Hydrolysed to some extent presumably.

The above values show that the quantities present should,

[2] Allbutt's System of Medicine, vol. iii.
[3] Biochemical Journal, 1906, p. 3.

from the indications of the preliminary experiments above, be quite sufficient to cause a precipitate to form, but that there must be inhibiting substances which prevent precipitation. The following experiments show that creatinine exerts an important inhibiting effect as regards prevention of precipitation of cuprous oxide from Fehling's solution by uric acid.

TABLE XIX.

Temperature of saturation (Centigrade).	Substance dissolved in distilled water.	Weight of creatinine added.	Result.
15°	Sodium urate.	3 mgm. per c.c.	The solution turned dark green, but no precipitate formed.
15°	Ammonium quadriurate.	1 ,, ,,	No precipitate.
40°	Sodium urate.	1 ,, ,,	A faint white precipitate after boiling (cuprous urate ?)*
40°	Ammonium quadriurate.	1 ,, ,,	No precipitate.*
50°	Sodium urate.	1 ,, ,,	No precipitate. A faint white precipitate on standing.
50°	Ammonium quadriurate.	1 ,, ,,	No precipitate.

* After boiling for a few minutes a green precipitate separated, which turned yellow on standing.

Uric acid and creatine.—Creatine also inhibits reduction of Fehling' solution by uric acid as the following results show.

TABLE XX.

Temperature of saturation (Centigrade).	Nature of solution.	Weight of creatinine added.	Result after boiling with equal volume of Fehling's solution.
40°	Sodium urate.	1 mgm. per c.c.	White precipitate.
40°	Ammonium quadriurate.	1 ,, ,,	No precipitate.
50°	Sodium urate.	3 ,, ,,	Green precipitate, changing to yellow.
50°	Ammonium quadriurate.	3 ,, ,,	No precipitate.

Uric acid and grape sugar.—Experiments showed that these substances did not seem materially to affect each other. A red precipitate was invariably obtained with mixtures or separately on boiling with Fehling's solution.

(4) *Mucin.*—Various experiments with mucin were next carried out so as to determine whether it might not play a part in the retarding influences affecting the reduction of Fehling's solution by grape sugar. According to Pavy [4] its effect should be small. The results are recorded in the following table. It must be mentioned that the mucin used had been prepared from ox-gall. Such mucin, as the investigations of Hammarsten and others show, differs from the substance from human bile.

(5) *Theobromine and Theine.*—Of these neither was found to have appreciable inhibiting power or to cause precipitates to form on boiling their solutions with Fehling's solution.

From these sets of experiments the conclusion may be arrived at that grape sugar, glycuronic acid, uric acid, and urates may cause the precipitation of a green substance from Fehling's solution under the influence of interfering substances normally present in urine. Creatinine has the most powerful inhibiting action among the substances present, but mucin and creatine have also distinctly retarding effects. The inhibiting influence is diminished on boiling for a few minutes. Uric acid and urates, theine and theobromine have no retarding influence. Whether the retardation depends upon the formation of ammonia as maintained by Pavy should be determined by experiment.

The most important point clearly brought out by the whole series of the above experiments is that small quantities of sugar might be present in normal urine—up to 0·1 per cent. or even 0·15 per cent.—without Fehling's test giving any definite indication. A ¼ per cent. would generally be readily detected, and 0·3 would invariably be indicated by taking proper precautions. A ½ per cent. should generally give a thick reddish precipitate.

[4] Carbohydrate Metabolism and Diabetes, 1906, p. 17.

TABLE XXI.

Temperature of saturation (Centigrade).	Reaction mixture added to Fehling's solution.	Result of boiling.
50°	Aqueous solution of mucin.	The mixture turned green; no precipitate.
40°	Mucin dissolved in urine.	Ditto.
50°	Mucin in water + 0·1 per cent. sugar.	A red precipitate immediately on boiling.
40°	Mucin + urine + 0·1 per cent. sugar.	Turned light green, but no definite precipitate in five minutes.
40°	Mucin + urine + 0·25 per cent. sugar.	A green precipitate in 20 seconds; changed to orange on standing.
40°	Mucin solution + creatinine (three milligrammes per cubic centimetre)	No apparent change.
40°	Mucin solution + creatine (three milligrammes per cubic centimetre).	Ditto.
40°	Mucin solution + ammonium quadriurate.	A faint red precipitate in five minutes.
40°	Mucin + urine + ammonium quadriurate.	Turned green; no precipitate.
40°	Mucin + urine + ammonium quadriurate + 0·1 per cent. sugar.	A green precipitate in two minutes.
40°	Ditto.	On boiling continuously a green precipitate in 40 seconds.
40°	Mucin + urine + ammonium quadriurate + two milligrammes creatinine per cubic centimetre + 0·1 per cent. sugar.	No precipitate.
40°	Mucin + urine + ammonium quadriurate + two milligrammes creatinine per cubic centimetre + 0·1 per cent. sugar + two milligrammes creatine.	No precipitate
40°	Mucin + ammonium quadriurate + two milligrammes creatinine + 0·1 per cent. sugar.	A green precipitate in one minute.
40°	Mucin + urine + ammonium quadriurate + three milligrammes creatinine per cubic centimetre + 0·25 per cent. sugar.	A green precipitate in two minutes and five seconds after boiling.
40°	Mucin + urine + ammonium quadriurate + three milligrammes creatine per cubic centimetre + 0·5 per cent. sugar.	Turned a bright orange and opalescent.*
40°	Mucin + urine + ammonium quadriurate + three milligrammes creatine per cubic centimetre + 1·0 per cent. sugar.	Turned a bright orange and in one minute gave a black precipitate.†

* On doubling the quantity of Fehling's solution a green precipitate formed at once.

† The proportion of Fehling's solution was insufficient.

II.—PAVY'S MODIFICATION OF THE COPPER TEST.

Pavy's method of determining sugar really gives the total quantity of reducing substances. In normal urine the quantity of sugar present is probably represented by from 20 to 50 per cent. of the reducing action. We refer to this later when considering Pavy's values. It has merely to be mentioned here that if Stillingfleet Johnson's method of removing creatinine, creatine, urates, and other interfering substances be adopted, Pavy's method of testing should indicate in the filtrate the quantity of grape sugar and similar bodies originally present. Experiments should be carried out in this connexion in order to verify definitely Allen's [5] statement that 0·05 per cent. or more of a reducing substance generally remains after treatment

[5] THE LANCET, July 28th, 1894, p. 213.

III.—THE SAFRANIN TEST FOR GRAPE SUGAR.

This admirable reagent for estimating small quantities of grape sugar was introduced by Crismer[6] in 1888 and has been investigated by Allen.[7] Safranin is a deep reddish powder, dissolving in water to give a blood-red solution quite stable on keeping. The commercial substance is probably a mixture of several bodies of allied constitution ($C_{19}H_{17}N_4Cl$, $C_{20}H_{19}N_4Cl$, and $C_{21}H_{21}N_4Cl$), which can be reduced by various substances in alkaline solution. *Unlike Fehling's solution, safranin is unaffected by creatinine, creatine, uric acid and urates, and mucin.* It is only slowly affected by albumin, so that even if albumin be present a fairly accurate approximation to the quantity of sugar in solution can generally be obtained without removing the albumin. These valuable properties render the safranin test much simpler in regard to consideration of the results obtained than Fehling's test and we are surprised that it has not received more general recognition. The method of testing for glucose by means of safranin is as follows. A solution of safranin, preferably containing one gramme per litre (approximately eight grains per pint) is employed. Two cubic centimetres of this solution and two cubic centimetres of normal caustic soda or potash (i.e., caustic soda containing 40 grammes per litre or caustic potash containing 56 grammes per litre) are mixed with two cubic centimetres of the solution to be tested—e.g., urine. The mixture is boiled and if glucose be present to the extent of 0·1 per cent. the bright red colour gives place to a clear yellow. At the same time the solution slowly becomes turbid from separation of the white leuco-derivative. An approximately quantitative estimation can be made by gradually adding more safranin and boiling until a distinct red tint remains. Every two cubic centimetres of safranin required indicates approximately 0·1 per cent. of grape sugar or some equivalent substance. Agitation of the solution should be avoided during the whole experiment because the leuco-body is readily re-oxidised by the oxygen of the air. If a large quantity of sugar is present the urine should be greatly diluted. Carrying out the reaction as above described, we have confirmed Crismer's statement that normal urine as a rule gives a distinct reaction, and if the reducing substance present is assumed for calculation purposes to be grape sugar, the quantity present varies generally between *0·025 and 0·15 per cent.* Under 0·025 per cent. has only been found by us in one instance—viz., 0·018 per cent. —in a urine of specific gravity 1008. It is probable that diet, exercise, and manner of life might alter these values somewhat. The general average that we have found for normal urines would be 0·07 to 0·08 per cent. In this connexion the observations of Worms[8] are worth mention. He examined the urine of 607 persons of the labouring class and found it in each case quite free from sugar, whereas out of 100 samples from different persons engaged in work involving mental activity and sedentary life he found sugar in ten cases. It might be pointed out, too, that the ingestion of sugars in large quantity will generally produce transitory glycosuria in quite healthy subjects.[9] As other sugars—e.g., lactose, lævulose, maltose, and galactose, and probably pentose, as well as glycuronic acid—reduce safranin, and perhaps unknown substances of similar reaction may be present in urine, the value *0·025 to 0·15 represents approximately the maximum quantities of reducing sugars which are generally present in normal urine.*

It might be argued that alkaline safranin solution is merely a reagent which indicates reducing substances of a certain type or types and does not directly prove that grape sugar is present. This must be admitted to be true and we have merely calculated the quantities indicated by safranin in preceding experiments as grape sugar for convenience of comparison. There are many arguments which can be brought forward, however, as confirming the assumption that grape sugar is at least one of the factors causing reduction. We have thought it well to summarise them at the end of the paper. Probably isomaltose is also present.

In order to show what kind of comparative results are obtained with safranin and Fehling's solution, the following tables of results (taken from tests in the wards of the Middlesex Hospital, which we were enabled to carry out by the kindness of Dr. W. Pasteur) are appended. They indicate how readily the maximum percentage of sugar can be found by means of safranin solution. In most cases, except in those containing albumin, it will be observed that, taking into consideration the results of Tables II. to XV., the

[6] Pharmaceutische Zeitschrift, series 3, xix., 348.
[7] Chemistry of Urine, p. 83.
[8] Bulletin de l'Académie de Médecine de Paris, 1895.
[9] Stewart's Physiology.

TABLE XXII. (*April, 1906.*)

Disease.	Specific gravity of urine.	Volume of safranin solution in c.c. decolourised by 2 c.c. of urine.	Percentage of decolourising substances calculated as grape sugar.	Result of Fehling's test.
Muscular rheumatism.	1027	3·0	0·15	A green colouration; precipitate on standing.
Rheumatism.	1010	0·5	0·025	The solution remained blue.
Chronic nephritis.	1012	0·5	0·025	A deep purple colour.*
Pulmonary tuberculosis.	1014	2·0	0·1	A green solution.
Ditto.	1037	2·8	0·14	A green solution; slight yellowish precipitate on standing.†
Morbus cordis.	1008	0·5	0·025	The solution remained blue.
Gastrectasis.	1018	3·0	0·15	A green solution; precipitate on standing.
Rheumatism.	1010	1·0	0·05	The solution remained blue.
Aneurysm.	1016	1·0	0·05	Ditto.
Tabes dorsalis.	—	2·0	0·1	A green solution.
Cirrhosis of liver.	1025	2·0	0·1	Ditto.
Diabetes.	1030	140·0 (7 c.c. for 0·1 c.c. urine)	7·0	A red precipitate at once.
Cerebral syphilis.	1010	1·0	0·05	The solution remained blue.
Hemiplegia.	1026	2·0	0·1	A greenish solution.
Influenza.	1024	2·0	0·1	Ditto.
Morbus cordis.	1018	1·5	0·075	Ditto.
Pernicious anæmia.	1014	2·0	0·1	A green solution.

* This sample gave a strong biuret reaction.
† This sample was saturated with urates, which have apparently aided in the formation of the precipitate formed on standing.

TABLE XXIII. (*May, 1906.*)

Disease.	Specific gravity of urine.	Safranin test.		Fehling's test.	
		Volume decolourised by 2 c.c. of urine.	Percentage of reducing substances calculated as grape sugar.	Before removal of albumin.	After removal of albumin by boiling.
Pneumonia.	1007	0·5	0·025	Remained blue.	—
Acute nephritis.	1011	1·0	0·05	A deep purple.	—
Pernicious anæmia.	1013	1·0	0·05	A greenish-blue precipitate on standing.	A deep green; no precipitate.
Morbus cordis.	1019	1·5	0·075	A green solution.	Green; a faint precipitate.
Malignant endocarditis.	—	1·2	0·06	Ditto.	Ditto.
Double pneumonia.	1024	2·0	0·1	A brownish-green tint.	A green solution; no precipitate.
Diabetes.	—	72·0 (7·2 c.c. for 0·2 c.c. urine)	3·6	A red precipitate immediately.	—
Pulmonary tuberculosis.	—	2·0	0·1	A green solution; precipitate on standing	A deep green; no precipitate.

All of these samples contained a small quantity of albumin except the first. In the third sample the albumin was in large quantity.

Fehling reaction might be foretold from the indications given by safranin. When albumin is present, as in the case of acute nephritis, the Fehling test is unreliable applied directly, as is, of course, generally recognised. We are inclined strongly to recommend the test as a substitute for that of Fehling. We must emphasise that when one considers that the inhibiting substances, creatinine, creatine, and mucin, and also the substances liable to cause confusion, like uric acid and urates, have no effect, while even albumin is usually negligible, it must be decided that it is a more scientific test than Fehling's or the picrate test as applied to urine. It is, in fact, the most convenient and reliable test which can be applied in the present state of our knowledge. If glycuronic acid be suspected because of the specific gravity of the urine, health and appearance, &c., of the applicant for insurance, recourse must be had to the phenylhydrazine and fermentation tests, or the matter should be referred to an expert.

It is worth noting that a sample of Fehling's solution prepared 40 days previously and which had been freely exposed to light gave a faint greenish precipitate with the first sample, although the reagent boiled alone was unchanged, whereas newly prepared Fehling's solution gave no reaction.

TABLE XXIV.

Disease.	Volume of safranin solution decolourised by 2 c.c. urine (approximately).	Percentage of reducing substances calculated as grape sugar.	Fehling's test.
Chorea.	4·0	0·2	A black precipitate.
Chlorosis.	1·0	0·05	—
Rheumatism.	1·0	0·05	A brownish precipitate.
Chorea.	1·0	0·05	—
Malignant disease of stomach.	4·5	0·22	A green precipitate.
Morbus cordis.	1·5	0·075	—
Dermatitis.	1·0	0·05	—
Typhoid fever (?).	1·5	0·075	—
Puerperal fever.	3·0	0·15	A green precipitate; lactose present.
Addison's disease.	2·5	0·12	—
Neurosis.	3·5	0·17	A green precipitate.
Gastrectasis.	2·5	0·12	—
Morbus cordis.	3·0	0·15	—
Rheumatism.	4·0	0·2	A green precipitate (slight).

The values in the above table are in many cases somewhat above the normal.

In connexion with the safranin test for grape sugar the following comparative table regarding the action of alkaline safranin solution upon substances more or less nearly allied to that substance is worth recording.

TABLE XXV.

Substance.	Quantity.	Volume of safranin solution (containing 0·5 gramme per litre) decolourised.*	Remarks.
Grape sugar (dextrose, glucose).	0·5 c.c. of a 1·0 per cent. solution (= 0·005 gm.).	5·5 to 6·0 c.c.	Reaction easy—complete within one and a half minutes.
Glycuronic acid.	Ditto.	5·5 to 6·0 c.c.	Ditto.
Lævulose.	Ditto.	Solution turns deep brown.	—
Galactose.	Ditto.	6·0 c.c. approximately.	Reaction easy—complete within one and a half minutes.
Lactose.	Ditto.	6·0 c.c.	More difficult than glucose.
Maltose.	Ditto.	5·5 c.c.	Ditto.
Cane sugar.	Ditto.	—	No reduction.

* The above values are only approximate. The strength of the safranin solution was half that recommended for general work.

IV.—THE PHENYLHYDRAZINE TEST FOR SUGAR.

The phenylhydrazine test for grape sugar stands in a different position from those so far discussed. If a precipitate be obtained, the melting-point of the crystals determined, and a microscopical examination of their form made, one can say as a rule what substance causes the precipitation. Grape sugar and lævulose give needles melting at 205° C., lactose wide prisms melting at 200° C., and maltose tabular crystals melting at 191° C., if the heating be rapidly effected. Cane sugar, as in the case of Fehling's solution and safranin, does not react. It is noteworthy, too, that according to Hirschl,[10] glycuronic acid, which reacts so readily with Fehling's solution and safranin that it is impossible to distinguish between it and glucose by these tests, can be distinguished by the phenylhydrazine reaction. Depending upon the manner of carrying out the test it gives yellow needles, or a brownish amorphous-like mass, the melting-point varying from about 115° C. to 150° C. Hirschl states that if one wishes to distinguish glycuronic acid from grape sugar by this test, the reaction mixture of von Jaksch[11] (50 cubic centimetres of urine, freed from albumin if necessary, two grammes of sodium acetate, and from one to two grammes of phenylhydrazine hydrochloride) should be heated on the water bath for at least an hour. The bright yellow crystals of phenyl-glucosazone, melting at from 204° to 205° C., are then readily distinguished from the brownish substances melting about 150° C. formed by glycuronic acid. We have confirmed this so far as difference in appearance and lower melting point are concerned, but have not gone carefully into exact differences. Hirschl is of opinion that traces of glycuronic acid compounds are normally present in urine, which agrees with the observations of Mayer.[12]

The phenylhydrazine test, taken in conjunction with the fact that glycuronates do not ferment under the action of yeast, may be regarded as fairly satisfactory methods of distinguishing between glucose and glycuronic acid. The test is, however, probably too troublesome for the average practitioner (for the melting point of the crystals obtained should always be taken and a microscopical examination should be made), who should, therefore, if the fermentation test is doubtful and other clinical observations seem to warrant such a course, refer the matter to an expert.

The phenylhydrazine test for grape sugar is a very delicate one. Allen[13] states that 0·005 per cent. can be detected in urine by means of it. Whether he means 0·005 per cent. of added sugar is not clear. There is no question that 0·005 per cent. can readily be detected in aqueous solution by means of it, as we have confirmed the fact, but other observers do not regard the test as being so sensitive as Allen states. Margulies[14] is of opinion that 0·02 per cent. can be detected, but that phosphates may interfere to some extent with the reaction, while Eschbaum[15] states that 0·01 per cent. may be detected if much uric acid be absent, but that 0·025 per cent. could be readily recognised in any case. Hirschl gives 0·03 per cent. in urine and 0·003 per cent. in aqueous solution as the limiting values. The accuracy and validity of the test have been questioned. Jolles[16] states that compounds resembling glucosazone in appearance and melting point are obtained from urines containing condensed glycuronic acids or nucleo-albumins, while according to Mayer[17] a brown amorphous precipitate is formed when normal urine is treated with phenylhydrazine and a 50 per cent. solution of acetic acid, the precipitate consisting of decomposition products of phenylhydrazine, probably chiefly diphenylhydrazine. The test is probably delicate enough if properly carried out to decide the question as to whether glucose is, as a rule, present in normal urine. Assuming that the characteristic crystals are obtained, the only flaw in the argument would be that the reagents used might have split off the glucose from some more complex body normally present, as suggested by the late Sir G. Johnson. This is unlikely. We have tested 25 samples in this way, and in each case have found a precipitate formed on standing for some time either by operating by the von Jaksch method as indicated above or by the more convenient, but perhaps less trustworthy,

[10] Zeitschrift für Physiologische Chemie, vol. xiv., p. 377.
[11] Zeitschrift für Medicin, vol. xi., p. 20.
[12] Berliner Klinische Wochenschrift, vol. xxxvi., pp. 591–593 and 617–619.
[13] Loc. cit., p. 88.
[14] Berliner Klinische Wochenschrift, vol. xxxvii., pp. 881–884.
[15] Apoth. Zeit., vol. xvii., 280–282.
[16] Pharm. Post, 1901, 34, p. 120.
[17] Berliner Klinische Wochenschrift, vol. xxxvii., pp. 5–7.

method of Schwartz,[19] who proceeds as follows: Boil ten cubic centimetres of the urine, and then add five cubic centimetres or more if necessary of a 10 per cent. solution of neutral lead acetate. Boil and filter hot, add caustic soda solution until the precipitate, which first forms, redissolves, and then a *little* phenylhydrazine hydrochloride. Boil for a few minutes and then acidulate with acetic acid. On standing a precipitate is obtained, which can be examined microscopically. The precipitate obtained should invariably be subjected to at least microscopical examination, if necessary after recrystallisation from alcohol and water. Some of the precipitates obtained by us did not on investigation seem to be glucosazone.

V.—THE FERMENTATION TEST FOR SUGAR.

Agreeing with Allen and other observers we have found the fermentation test untrustworthy for the detection of small quantities of sugar. It gives satisfactory results under certain conditions if over 0·5 per cent. of glucose be present. If the bulk of the liquid present is considerable, even with 0·5 and 1 per cent. of sugar present we have found that the gas given off at first gets reabsorbed again. In one experiment with a 1 per cent. aqueous solution kept at 25° C. 50 cubic centimetres of gas appeared above the liquid in 12 hours, which in another 12 hours had gradually dissolved until only 10 cubic centimetres were left. On cooling, this residue was also absorbed. A check experiment seemed to show that this might entirely be due to absorption by the water, because 50 cubic centimetres of carbon dioxide rapidly passed into a graduated vessel over water under similar conditions was entirely absorbed within 12 hours. If fermentation is to be judged by the volume of carbon dioxide given off it is advisable to use small quantities of liquid and to stand the tubes over mercury. Whether any basic body is formed which could take up carbon dioxide was not determined. If so, it would presumably have to be in excess of the succinic acid usually formed as a by-product during the fermentation of grape sugar. We confirmed that glycuronic acid does not ferment with yeast either in neutral or alkaline solution.

It might be worth while determining whether aerobic conditions with large supply of oxygen might not give more satisfactory results than the usual method employed, when the only free oxygen available for the yeast would be that dissolved in the water. Büchner and Mitscherlich[19] point out that the yeast used for fermentation purposes should be free from glycogen—which "bottom" yeast often contains—otherwise carbon dioxide may come off even if the solution contains no sugar. Other observers, Pflüger, Schöndorff, and Wenzel[20] consider the fermentation test untrustworthy.

VI.—THE ALKALINE PICRIC ACID TEST FOR SUGAR.

Braun's alkaline picric acid test for sugar in urine is complicated by the fact that creatinine and creatine reduce alkaline picrate solutions giving a red colour. Mucin does not reduce. Three milligrammes of creatinine per cubic centimetre, however, merely cause the formation of a bright-red tint considerably lighter than that given by 0·1 per cent. of sugar. The test is therefore a delicate one and we have found no difficulty in detecting some reducing substance other than creatinine or creatine in normal urine by means of it. The test was strongly recommended by Sir G. Johnson[21] as a means of quantitatively determining sugar in diabetes, but for the reason given we consider it inferior to the safranin test, and it can hardly be regarded as more accurate than Fehling's quantitative test, if the reaction is rapidly completed, or to Pavy's ammoniacal copper reaction. In testing for small quantities of sugar it has, however, the advantage over Fehling's and Pavy's tests of not being affected by urates, but the decisive reactions obtained with creatinine and creatine neutralise this advantage, at least to a considerable extent.

VII.—OTHER TESTS FOR SUGAR.

Many other reactions for the determination of sugar in urine have been proposed, of which the following might be mentioned. (*a*) The methylene blue test recommended by Wender[22] for the recognition and rough estimation of sugar in diabetes is similar in application to the safranin test. We have not found it to be so convenient, however. We have found some commercial samples of methylene blue to contain traces of impurities giving a blue tint not readily reduced. Qualitatively the test is satisfactory, but it must be kept in view that it is reduced by creatinine and creatine, although not by urates. This renders it much less satisfactory than the safranin test in testing for small quantities of sugar. (*b*) Gerrard's cyano-cupric process,[23] well spoken of by Allen; (*c*) Nylander's modification of Böttger's bismuth test; (*d*) Knapp's alkaline, potassio-mercuric cyanide test; (*e*) Sacchse's employment of Nessler's reagent—potassium mercuric iodide; and (*f*) Hoppe-Seyler's ortho-nitro-phenyl-propiolic acid have not been investigated. Margulies states that the bismuth test is not capable of detecting less than 0·05 per cent. of sugar, while Jolles states that less than 0·08 cannot be readily detected, unless after boiling with salt solution. Ventre[24] mentions a test depending upon an interaction with sulphuric acid, nitrobenzene in alcohol, and ammonium nitromolybdate, by which he claims that 0·000,001 per cent. of sugar can be detected.

VIII.—THE PRESENCE OF SUGAR IN NORMAL URINE, THE POSSIBLE OCCURRENCE OF GLYCURONIC ACID, PENTOSE, LACTOSE, &c., BEING TAKEN INTO CONSIDERATION.

From the clinical point of view this problem is of considerable importance and has already caused much discussion (e.g., THE LANCET, 1894 and 1895). If sugar is normally present in urine in more than small traces, then in examining for life insurance purposes it has to be decided what quantity must be regarded as pathological, while, if sugar should not be present in normal urine, its detection indicates at once an abnormal condition. We have already pointed out that a great number of observers maintain that sugar is normally present, and we have come to agree with them, and especially with Pavy,[25] who stated as early as 1878 that sugar was normally present in small quantity, and that only a quantitative distinction could be made between the amounts present in health and disease. This is strongly emphasised in Dr. Pavy's recent work on proteid metabolism.

We have no intention of entering into the physiological side of the problem, but would merely point out that if sugar is present in the blood, as Pavy's results seem to show, it is unlikely, although not impossible, that a body of such small molecular weight could be *completely* stopped by the kidney cells as Bunge states. It has been determined in this connexion by Butte[26] that after intravenous injection of glucose in quantity the elimination from the blood only takes from 50 minutes to two hours, but the elimination by the urine takes 36 hours, presumably neglecting the traces normally present.

We have already stated that we venture to differ from Dr. Pavy's method of stating his results. We find by the safranin test that from 0·02 to 0·15 per cent. of a body or bodies reacting identically with grape sugar may normally be present, say 0·08 per cent. (approximately) as an average by the experiments so far carried out. Diet and amount of exercise, as well as specific gravity of the urine, may alter the values considerably. In very concentrated urine values up to 0·25 per cent. might be found. Above 0·3 per cent. should probably be regarded as abnormal, *provided the diet has been normal*, and above 0·4 per cent. should, in our opinion, be regarded as of pathological import. Pavy gives 0·279 per cent. as an average of several experiments (his values varying from 0·091 to 0·488). This value is certainly too high if seriously referred to sugar alone and has been obtained because the reducing action of creatinine, creatine, mucin, and urates has not been allowed for. Dr. Pavy[27] is aware that these substances exercise reducing action but does not regard them as "answering for much in this direction." In our opinion these substances may represent 50 per cent. or more of the reducing effect observed. As the quantities present are of some importance Dr. Pavy's figures for blood and urine before and after hydrolysis should be compared with results obtained by means of the safranin, the Pavy, and the alkaline picrate tests, creatinine and urates being eliminated by Stillingfleet Johnson's method (mercuric acetate) before using Pavy's method.

We would point out that the results of Luther[28] are

[19] Pharm. Zeitung, vol. xxiii., p. 465.
[19] Zeitschrift für Physiologische Chemie, 1904, vol. xlii., pp. 534–562.
[20] Pflüger's Archiv, 1904, pp. 121–176.
[21] THE LANCET, Jan. 12th, 1895, p. 87.
[22] Pharm. Post, vol. xxvi., pp. 393–397.
[22] Pharmaceutical Journal [3], vol. xxiii., p. 208.
[24] Zeitschrift Ver Deutschen Zuckerind, 1902.
[25] Guy's Hospital Reports, vol. xxi., p. 413.
[26] Comptes Rendus de la Société de Biologie, 1896, x. 3.
[27] Proteid Metabolism, p. 17.
[28] Chemisches Centralblatt, 1891, vol. ii., p. 9

similar to those recorded above for safranin. He finds 0·1 per cent. as an average in adult excretions and states that the total carbohydrates amount to 0·2 per cent. Rosin[29] states that the total carbohydrates vary between 1·5 and 5·09 grammes per day—i.e., taking 1500 cubic centimetres as normal, between 0·1 to 0·33 per cent.; while Gregor[30] gives the total reducing substances present as determined by Peske's[31] method (ammoniacal copper similar to Pavy's but using colourless paraffin oil to prevent the access of air) to vary from 0·0825 to 0·347 per cent., the values agreeing well with those of Pavy. Other observers differ greatly in their values. According to Baisch[32] the quantity of glucose averages 0·005 per cent. and of total carbohydrate about 0·01 per cent. In a later communication[33] he states that d-glucose, isomaltose, and animal gum are the chief reducing substances. This agrees with Pavy's statement of substances. Pavy points out, as already mentioned, that animal gum is a comparatively insignificant factor. Lemaire[34] gives a similar value to that of Baisch—viz., 0·01 per cent. (approximately). It must be pointed out, however, that the results of Baisch and Lemaire are probably considerably under the true quantities present. Both these observers used the Schotten-Baumann benzoylation method for estimation of the sugar. According to Reinbold[35] the test cannot be regarded as in any way quantitative in its indications. The weight of precipitate obtained varies greatly with the conditions of the experiment, the quantity of benzoyl chloride used and the amount of soda being important factors. Reinbold found it impossible to modify the reaction so as to obtain even comparable results from different samples of urine. The negative tests carried out by Sir G. Johnson as well as Seegen's[36] carbon test require further investigation.

Finally, it might be noted that discrimination must be employed with regard to the reducing substances which have to be kept in view as well as grape sugar in testing for life insurance purposes, such as glycuronic acid, pentose, glycosuric acid, lactose (met with during lactation), albumin, creatinine, creatine, &c. Inosite, muscle sugar, sometimes met with, although having the same formula as glucose, is not a carbohydrate. It is hexa oxy-hexahydrobenzene. It neither reduces Fehling's solution nor reacts with phenylhydrazine. Lævulose has only been met with mixed with grape sugar in diabetes, so that its discrimination is, as a rule, unimportant. Glycuronic acid and pentose are perhaps the most confusing of the above substances. Glycuronic acid may be present in quantity and be of no (or little) pathological import, as already stated. It readily appears, too, as a constituent of urine when the following drugs are being taken: chloral hydrate, chloroform, hydrochinon, copaiba, curare, morphine, salicylic acid, tannic acid, turpentine, cubebs, and croton chloral. Neuberg[37] has shown that the acid can best be detected in the presence of sugar by the formation of a para-bromophenylhydrazine compound. It can be separated from sugars by means of its cinchonine salt. This body has the formula $C_6H_{10}O_7$, $C_{19}H_{23}N_2O$, crystallises in characteristic white needles melting at 204° C., and has a specific rotation $[a]_D$ of $+138·6°$.

With regard to the occurrence of pentose in urine, this apparently occurs comparatively rarely, but it is worth noting that in ordinary clinical work it might in many cases be set down as glucose. If a precipitate is obtained with Fehling's solution and with phenylhydrazine, but the urine is optically inactive and will not ferment, the occurrence of pentose is probably indicated. The presence of dextrorotatory pentose in urine has been recorded however. The orcin test can be used as a diagnostic one and is best carried out according to Blumenthal[38] as follows. Three cubic centimetres of the urine are treated with six cubic centimetres of fuming hydrochloric acid, a few granules of orcin are then added, and the mixture is heated to the boiling point. As soon as the mixture begins to boil, if a bluish-green colour appears, this may be regarded as proof positive of pentose. Urine containing grape or milk sugar does not give this reaction, while urine containing glycuronic acid gives the test only on prolonged boiling, and then the precipitate is never greenish-blue but is more of a violet colour. As regards the significance of pentosuria Blumenthal states that pentosurics must be admitted to have as favourable a prognosis as mild cases of diabetes.

IX.—CONCLUSIONS.

1. The Fehling's test for sugar in urine is complicated by the retarding effects of creatinine, creatine, and mucin as regards the formation of a precipitate and by the auxiliary effect due to urates. Creatinine has a much greater retarding influence than either creatine or mucin.

2. When testing for small quantities of sugar in order to carry out the test satisfactorily the inhibiting influence must be neutralised in one of the following ways. (*a*) By diluting the urine if necessary so that its specific gravity is lowered to 1012 to 1015, when the presence of not more than 0·15 per cent. of sugar may be masked. (*b*) By increasing the volume of Fehling's solution used. The following proportions give good results as a rule:—

Specific gravity of urine.	Cubic centimetres of urine.	Cubic centimetres of Fehling's solution.
Up to 1020	2	2·0
1020 „ 1025	2	2·5
1025 „ 1030	2	3·0
1030 „ 1035	2	3·5
1035 „ 1040	2	4·0
1040 „ 1045	2	4·5

(*c*) By precipitating the interfering substances—including urates—by either (1) Allen's method[39] where copper sulphate and sodium acetate are used to bring down urates, &c.; or (2) Stillingfleet Johnson's[40] method, when mercuric chloride and sodium acetate are used.

3. Temperature has a very important influence both on the appearance and formation of a precipitate, as shown in Tables VII. to XI., if only small quantities of sugar are present. Boiling for a few minutes undoubtedly aids the formation of a precipitate, but may possibly bring down a green precipitate due to excess of urates, unless these have been previously removed.

4. Taking the above facts into consideration, we are of opinion that the most convenient method of procedure when testing for life insurance purposes is as follows. Either dilute the urine until its specific gravity is from 1012 to 1015 (e.g., a urine of specific gravity from 1025 to 1030 would require dilution with an equal volume of water) and then mix with an equal volume of Fehling's solution, or add a larger proportion of Fehling's solution as indicated above; then boil for a few seconds. If no precipitate forms within two minutes it may confidently be concluded that there is no sugar present of pathological import. 0·4 per cent. or more would generally under such conditions give an orange to red precipitate within one minute of reaching the boiling point, while from 0·2 to 0·25 per cent. would give a precipitate within two minutes.

5. The alkaline safranin test for sugar deserves to come into more general use. In the present state of our knowledge it is a more scientific test for sugar in urine than that of Fehling or Pavy, or the picrate test, since the reagent is unaffected by creatinine, creatine, mucin, uric acid and urates, and only slowly by albumin.

6. The fact that safranin invariably gives a reaction with ordinary urine would seem to directly negatives Stillingfleet Johnson's statement, sometimes met with in physiological text-books, that with normal urine three-fourths of the reducing action is due to creatinine and one-fourth to urates.

7. As the results obtained so far indicate that the reaction with safranin indicates a reducing substance or substances which, if calculated as grape sugar, usually varies from 0·02 to 0·20 per cent., Dr. Pavy's values for *sugar* in urine, and perhaps in blood, probably require modification.

8. The phenylhydrazine test must be used with caution when testing for small quantities of sugar. In doubtful

[29] Centralblatt für die Medicinischen Wissenschaften, 1901, vol. ii. p. 179.
[30] Chemisches Centralblatt, 1897, vol. ii., p. 231.
[31] Proceedings of the Chemical Society, 1895, p. 43.
[32] Zeitschrift für Physiologische Chemie, vol. xix., pp. 339-368.
[33] Ibid., vol. xx., pp. 249-252.
[34] Ibid., 1896, vol. xxi., p. 442.
[35] Pflüger's Archiv, 1902, vol. xci., pp. 35-70.
[36] Centralblatt für die Medicinischen Wissenschaften, 1886, p. 44.
[37] Berichte der Deutschen Chemischen Gesellschaft, 1900, p. 3315.
[38] Cabot's Diseases of Metabolism and of Blood, 1906.
[39] Chemistry of Urine, p. 62.
[40] Ibid., p. 55.

cases the crystals should always at least be examined microscopically and the melting point should preferably be determined.

9. The fermentation test is untrustworthy for small quantities of sugar and in this connexion requires further investigation.

10. The balance of evidence strongly supports the view that small quantities of sugar are normally present in urine. The minimum value which could be assigned for the average amount present would probably be 0·01 per cent. approximately, and the maximum average value assignable would probably be between from 0·05 to 0·09 per cent., and certainly not over 0·1 per cent. Sir G. Johnson's application of the picrate test to prove the absence of sugar from urine, Seegen's carbon test, and Fluckiger's statement regarding the decomposition of reducing substances present in urine on evaporation at 100° C. require further study.

11. From the results of other observers and theoretical considerations Wender's methylene blue test, Nylander's bismuth test, Hoppe-Seyler's ortho-nitrophenyl propiolic acid test, Sacchse's potassio-mercuric iodide test, and Knapp's mercuric cyanide test are probably inferior in convenience, or accuracy, or both, to the safranin test.

12. Finally, in testing for life assurance, as many tests as possible should be applied in doubtful cases. The safranin test if used as an auxiliary to the Fehling test might alone be sufficient to settle troublesome cases where small quantities of sugar and large quantities of creatinine cause the latter test to be uncertain. Glycuronic acid can be distinguished from glucose by the fermentation and phenylhydrazine tests.

NOTES ON AN UNUSUAL CASE OF THROMBOSIS OF THE LOWER PART OF THE LATERAL SINUS, OF AURAL ORIGIN.

BY ADOLPH BRONNER, M.D.,

SENIOR SURGEON TO THE BRADFORD EYE AND EAR HOSPITAL; LARYNGOLOGIST TO THE BRADFORD ROYAL INFIRMARY.

THE complications of mastoid disease are varied and often most interesting. The following case seems to me to be a very unusual one and instructive in many ways.

A strong healthy lad, aged 14 years, had had a discharge from the left ear, with occasional attacks of pain, for several years. I saw him on August 23rd. He had had severe pain in the mastoid region, off and on, for some days. There was no swelling or tenderness over the mastoid or over the jugular vein, but a large perforation of the drum with scanty offensive discharge. The temperature was 104° F. and the pulse was 94. The discs were normal. He was put to bed and glycerine-of-carbolic-acid eardrops were applied. On the next day the pain had disappeared and the temperature was normal. He felt perfectly well, with no pain or fever, until Sept. 2nd, when there were a sudden rise of temperature to 104° and a severe rigor. The mastoid was opened at once and the lateral sinus was exposed. Some pus was found in the mastoid cells, but the sinus was apparently quite normal, the dura mater was not thickened, and there was no thrombosis. As the rigors recurred and there was crepitation over the left lung the wound was reopened on Sept. 5th. The dura mater looked quite normal, there was no extradural abscess, and the sinus was not thrombosed. An incision was made into the sinus and there was a sudden gush of blood, which was difficult to control. There was no swelling or tenderness over the jugular vein. There was no papillitis, although the discs were rather congested. Both lungs became involved and there were signs of commencing endocarditis. The cerebellum was explored with negative results. The boy died on Sept. 19th. The post-mortem examination showed a small purulent clot in the jugular bulb. The lateral sinus itself was not thrombosed and the walls were nearly normal, with perhaps some thickening in the lower part.

This case is interesting from several points of view. There never was any swelling or tenderness over the mastoid or over the jugular vein. The walls of the lateral sinus were practically normal and the thrombosis was situated low down in the bulb of the jugular. We should, in all similar cases, not only examine the upper part of the lateral sinus, but also the lower part as far down as the bulb of the jugular. The sinus may be apparently normal and the thrombosis be situated lower down. In fact, we should always, in cases of mastoid disease with recurrent rigors, ligature the jugular, even if we cannot find any definite lesions in the vein. The walls may be diseased over a very small area and a small septic clot form there, which would give rise to septic disease of the lungs. Had the jugular been tied early in this case the boy's life would probably have been saved.

Bradford.

NOTES ON A CASE OF PERICARDITIS FOLLOWING HEAD INJURY; PARACENTESIS.

BY JOHN GILLAN, M.A., M.B., C.M. GLASG.

THE patient whose case forms the subject of the following notes was a lad, aged 16 years, employed in the coal-pit here. On July 4th last while at work he was thrown against a large wheel which carries a wire rope and which was rotating at considerable speed. His head came in contact with the flange of the wheel and as he could not release himself he had to lie in that position for several minutes till the wheel could be stopped. The resulting injury was a very much lacerated wound, extending from the upper part of the posterior triangle of the neck to the parietal eminence and passing immediately behind the auricle. The wound was six and a half inches long by three and a half inches broad. In the centre, where the prominence of the mastoid should have been, was a deep groove filed out of the bone by the friction of the wheel. The wound was in a very dirty condition, grease and coal-dust having been forced in amongst the torn muscles and fascia. The wheel, owing to the friction of the wire-rope and the speed at which it was rotating, must have been hot as there was evidently burning as well as laceration of the tissues. When I saw the lad about an hour after the accident there were no signs of concussion. After prolonged and careful cleansing of the wound it was dressed with iodoform and lint wrung out of perchloride solution.

It would be needless to describe in minute detail the progress of the case up to the onset of the pericarditis, but I may say that with daily dressing the wound, so far as the soft tissues were concerned, did well after the separation of superficial sloughs. It soon showed a healthy granulating surface and healing edge. There remained, however, a layer of dead bone on the surface of the groove in the mastoid region.

The general condition of the patient almost from the very first was not good. On the third day his temperature began to rise. It continued to be very variable, ranging from subnormal to 105·4° F. and showing no regularity in its rise and fall. He had attacks of sickness every third day or so, his appetite failed, he lost flesh rapidly, had occasional rigors and sweating, and obstinate constipation. His pulse-rate varied with the temperature from 80 to 120 per minute, but was never abnormally slow. There were no other signs of brain compression or irritation but it seemed clear that there was some septic condition within the skull, probably a septic meningitis.

On August 15th a sequestrum, consisting of a thin sheet of bone covering two-thirds of the original groove, was found to be loose and was removed. In the central and deepest part of the groove the removal of this dead bone left nothing but unhealthy granulations; in the shallower part the inner table was left. A small quantity of pus escaped at the time and on the next morning the dressings were found to be soaked with pus. Great improvement followed. The temperature fell to subnormal, continued so for three days, and then rose slightly, but remained under 100°. The pulse-rate varied from 80 to 95 per minute. The sickness abated, the bowels moved naturally, and only one rigor occurred after the removal of the sequestrum. This improvement continued for eight days (until the 23rd), when he was suddenly seized about 4 P.M. with violent pain in the præcordial region, most intense at the nipple. The temperature was found to have risen to 101° and the pulse to 104. Nothing abnormal could be heard on auscultation until the following day, when slight pericardial friction was made out a little above and to the inner side of the nipple. There was no sign of effusion.

On August 25th the temperature was 100° and it varied

very little from this point for the next seven days. The pulse was 120. Friction had disappeared and the cardiac dulness was increased. The effusion rapidly increased until on the sixth day from the onset of the pericarditis the cardiac dulness had reached the first intercostal space above; on the inner side one inch beyond the right border of the sternum and on the outer one and a half inches beyond the nipple line. The apex beat could not be felt. On the left side of the chest behind there was also an area of dulness. Signs of cardiac failure had become pronounced. The heart sounds were weak and distant. The pulse had risen to 140 per minute when the patient was quite still and the slightest movement sent it higher. It was regular but weak, thready, and without dicrotism. There was cyanosis. The breathing was hurried and distressed although there was no orthopnœa, the lad preferring to lie on his back with his head fairly low. All nourishment was refused and although there was no pain sleep could not be obtained.

On August 30th—i.e., the seventh day from the onset—a small trocar and cannula connected with an aspirator was passed into the chest in the fourth left intercostal space, one inch from the border of the sternum. A slight vacuum was formed and fluid at once began to flow. When about six ounces had been removed the cannula was withdrawn and the puncture was sealed. The patient bore the operation well. The fluid was clear with a very faint greenish tinge and a few flocculent particles floating in it. Very slight lessening of the cardiac dulness could be detected. The effect was almost immediate. Two hours afterwards I found him quietly sleeping. His pulse was stronger and fuller and the rate had fallen to 120. He slept all night and in the morning his pulse had fallen to 110. The breathing was easy and the cyanosis had disappeared.

The further progress of the case has been one of steady and uneventful improvement. Within a few days the pulse-rate fell to 80. Two days after tapping the temperature fell to normal and there has been no subsequent material rise. The remainder of the fluid was absorbed so quickly that at the end of a week the cardiac dulness seemed normal. His condition still remains (Oct. 15th) good and practically free from anxiety, although there is still a granulating surface unhealed on the head.

The points of interest in the case seem to me to be: 1. The great and immediate relief obtained by the removal of a relatively small quantity of fluid. The actual quantity removed was six ounces six drachms, and considering the extent of the dull area and the small impression made on it by the withdrawal of this quantity it is obvious that the amount of fluid remaining must have been very large compared with what was withdrawn. 2. The rapid absorption of the remaining fluid. 3. The fact that a pericarditis, presumably the result of a septic process, should pass off so quickly and completely without the formation of pus within the pericardium. The other common causes of pericarditis could be excluded in this case. There was no Bright's disease. There was no other indication of rheumatism nor was there a rheumatic family history.

Ryhope.

ON THE DISINFECTANT PROPERTIES OF HYPOCHLORITES OF SODIUM AND MAGNESIUM AS PRODUCED BY ELECTROLYSIS.

BY DAVID SOMMERVILLE, B.A., M.D., D.P.H., M.R.C.P., F.C.S.,

LECTURER IN PUBLIC HEALTH, KING'S COLLEGE, LONDON;

AND

J. T. AINSLIE WALKER, F.C.S.

IN a short note on the disinfectant value of "electrolysed sea water" reported in *Public Health* for February, 1906, we drew attention to the facts that such a solution containing one gramme available chlorine per litre possesses a germicidal value represented in terms of the carbolic acid coefficient as 0·2; and that when the fluid was diluted with sterile urine the carbolic acid coefficient practically vanished.

In an annotation entitled "Electrolytic Disinfectant," published in THE LANCET,[1] certain claims are made for the disinfectant properties of an electrolysed saline fluid to which in the interests of sanitary science we deem it necessary to call further attention. In an introductory reference to the findings of THE LANCET Special Analytical Sanitary Commission on the Treatment of Sewage by the Hermite Process at Worthing in 1893, it is stated that it was then shown that the disinfecting power of the electrolysed saline fluid on the bacillus typhosus fell to one-half or less of its previous disinfecting power up to the first five or ten minutes of its operation; but after this time its efficiency seemed to be recovered; and an attempt is made to explain the recovery by assuming a "carrier" action for hypothetical chlorine bodies in combination with the medium, "by which the disinfectant is handed on in an even more efficient form to the micro-organisms." "A similar action," it is added, "takes place on adding the antiseptic to urine—that is to say, the antiseptic value tested in five minutes is reduced to about one half on the addition of urine; but the antiseptic power which seems to have been lost, if it is given sufficient time to operate, is still available, as in 24 hours the solution with urine exerts the same influence as that without. It, in fact, seems more active. Samples of broth which had received comparatively small quantities of electrolysed saline solution, even after several weeks, contained a sufficient amount of available chlorine to be titrated in the form of iodine with arsenious acid or thiosulphate of soda." And referring to the electrolysed solution of magnesium and sodium chlorides prepared at Poplar, the writer claims for this fluid that it "keeps at a standard strength and is permanent."

With regard to the "carrier" or catalytic action claimed we cannot conceive what, or of what nature, the assumed substance, or substances, may be. It is clear that the germicidal action of an electrolysed solution of hypochlorites in conjunction with NaOH is ultimately effected through the union of nascent O (derived from hypochlorous acid) with the protoplasm of the germ. The possibility of free Cl uniting with and coagulating the bacterial protoplasm is shut out by reason of the infinitely greater chemical affinity of Cl for H_2O and NaOH than for the protoplasm of the microbe or other form of organic matter encountered. In the separation of O from HClO, as in the equation $HClO = HCl + O$, and in the interaction of HCl with NaOH, as per the equation $HCl + NaOH = NaCl + H_2O$, we see no opportunity for the formation of chlorine bodies capable of producing hypochlorous acid or free Cl; and, for reasons mentioned below, it must be admitted that the formation of HClO continues only so long as the electric current acts.

With respect to the permanence and standard strength of the fluid on keeping it is unnecessary to resort to experiment to demonstrate the obvious conclusion—viz., that in such a mixture of stable and unstable compounds a rearrangement of the more unstable ions will commence immediately the external energy-transformer is removed, and that the time required for the attainment of equilibrium will depend only on the nature and magnitude of secondary energy-transformers, such as light, internal and external heat, &c. Assuming that the associated organic matter acts in the capacity of a secondary energy-transformer the change must be in the direction of hypochlorous acid becoming hydrochloric acid, or a chloride, and not in the direction of the lower-potential chloride becoming the higher-potential hypochlorous acid, since the last type of energy change is only possible under the action of an external energy-transformer.

The following equation represents what occurs in fairly concentrated solutions when sodium hypochlorite acts on urea:

$$CO\begin{matrix}\diagup H_2N \\ \diagdown H_2N\end{matrix} + 3NaClO = 3NaCl + 2H_2O + CO_2 + N_2.$$

From consideration of the nature of the bodies on the right of the equation it is evident that neither in strong nor in weak solutions can there be any possibility of the re-formation of hypochlorous acid or its salts apart from the type of external energy-transformer just mentioned. These remarks apply equally to mixtures of hypochlorites with uric acid, creatinine, and the other urinary compounds of like type. Effront[2] has shown that amides, imides, nitril bases, acid amides, and amino-acids, react at ordinary temperatures on alkaline hypochlorites, and that thereby a loss of Cl occurs which is proportional to the weight of the added substance. It must therefore be concluded that the available Cl in this

[1] THE LANCET, August 18th, 1906, p. 453.

[2] Bericht der Deutschen Chemischen Gesellschaft, 37, 4290 (1904).

fluid diminishes on standing, is rapidly destroyed in the presence of organic matter, and does not later reappear.

The following experiments attest the truth of these conclusions:—An estimation of the available Cl in a sample of electrolysed fluid, obtained at Poplar on June 23rd, 1906, by the arsenious acid method, gave us 0·355 per cent. Re-examination of this fluid on August 26th by the same method gave 0·319 per cent. available Cl, a loss of a little more than 11 per cent.

Admixture with urine: equal volumes of the fluid and human urine (average of four samples passed by healthy workmen) when left in contact for an hour gave no reaction with sensitive KI-starch paper. After 24 hours a like result was obtained; and the solution tested weekly for six weeks gave the same negative result.

The determination of the carbolic acid coefficient of the fluid, using bacillus typhosus, gave us (1) with pure water as the diluent, 0·6; (2) with urine as the diluent, after one minute's contact, 0·075; and (3) with urine as the diluent, after one hour's contact, less than 0·01.

It is thus seen that the hypochlorites of this fluid, like all hypochlorites, are unstable and, in presence of organic matter, untrustworthy disinfectants; and to make such claims as those above noted is not calculated either to benefit the public or to advance the interests of sanitary science.

A CASE OF POISONING BY "X.L. ALL VAPORIZING FUMIGATOR."

BY EDWARD J. BLACKETT, M.R.C.S. ENG., L.R.C.P. LOND.

IN the early hours of Oct. 11th a man was found lying on his face on the grass in one of the public parks quite dead, with rigor mortis well marked. The ground close to the body showed no signs of a struggle, though a tuft of grass torn up by the roots was grasped in the right hand. On turning the body over, the left side of the face and neck were covered with blood; there was also blood around the nostrils. At first sight it looked as if the case were one of "cut throat." However, on washing the blood away no wound could be found beyond a slight graze on the bridge of the nose, so the probable cause of the hæmorrhage was from the nostrils due to the man falling heavily on his face. There were no other marks of violence on the body. On searching the clothing a bottle, of about six ounces capacity, of "X.L. All Vaporizing Fumigator," two-thirds empty, was found in the inner pocket of the overcoat; the stopper was in the bottle. The contents smelt strongly of camphor, and according to the label the fluid was a concentrated solution of nicotine, 10 per cent. stronger than No. 3 (No. 3 being another of these preparations). A warning was also printed advising people to keep the bottle in a safe place and out of the reach of children. There was no smell of camphor about the mouth or the clothing.

At the post-mortem examination the following points of interest were noticed. The body was that of a well-nourished man 5 feet 5 inches in height. There was a pedunculated tumour of the size of a hazel nut growing from the centre of the back of the neck. The penis was in a state of erection and the right testicle was drawn up into the inguinal canal. The lungs were engorged and of a deep purple colour, with old pleuritic adhesions on the right side. The blood was very dark purple and liquid. The heart weighed 13¾ ounces and showed signs of old mitral disease. There were two "milk spots," each of about the size of a sixpenny-piece, situated on the anterior surface of the left ventricle. The œsophagus was very congested and contained a fluid smelling strongly of camphor; the mucous membrane was swollen. The stomach contained about one and half ounces of chocolate-coloured fluid, also smelling of camphor, and a little undigested food. The mucous membrane was dark crimson in colour and the blood-vessels were in a state of extreme engorgement. The camphor vapour was so strong that it caused watering of the eyes. The intestines were distended with gas and were bile stained. The liver showed signs of old cirrhosis and was congested. The kidneys were large and very congested. The scalp of the head and the membranes of the brain were congested and the blood was dark coloured. The brain was normal.

"X.L. All Vaporizing Fumigator" is largely used for the fumigation of greenhouses; it can be obtained from any seedsman or nurseryman, and since, I believe, 1904 has had a poison label attached to each bottle, previously to which date no such label was on the bottle. It is a mixture containing nicotine, camphor, and alcohol, with a little water and colouring matter, the percentages being: nicotine, 37·3; camphor, 34·3; and alcohol, 15·1, the balance being water. Three or four drops are sufficient to destroy human life.[1] A fatal case of poisoning by the "X L. All Insecticide," containing 4 per cent. of nicotine, has been reported.[2] As far as I can gather this is the first fatal case of poisoning by the fumigator, which is nearly ten times stronger than the insecticide. Cases of poisoning by nicotine are comparatively rare, though in the pre-anæsthetic days, when enemata of tobacco were given to produce muscular relaxation in order to facilitate the reduction of fractures, ten fatal cases were recorded. In 1851 a Belgium count murdered his brother-in-law by giving him nicotine. Fatal cases have also been reported where tobacco or snuff has been put into beer. Dr. A. P. Luff records a case of a child who used an old tobacco-pipe with which to blow soap bubbles, and also one of a boy who smoked a pennyworth of twist tobacco; both these cases ended fatally. In the present case there was no sign of the man having vomited. Death must have taken place almost directly, though he had time to replace the stopper in the bottle and to put it into his coat pocket before he died. Considering the ease with which the general public can obtain this deadly poison, it is strange that there have not been more fatal cases to record, and that the regulations governing its sale are not more stringent.

Bryanston-street, W.

[1] Report by Sir Thomas Stevenson, Pharmaceutical Journal, September, 1904.

[2] Pharmaceutical Journal, 1904, p. 375.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

On Some Aspects of Dilatation of the Heart.

A MEETING of this society was held on Oct. 23rd, Mr. J. WARRINGTON HAWARD, the President, being in the chair.

Dr. ALFRED M. GOSSAGE read a paper on the above subject, an abstract of which appears at p. 1126.

Dr. ALEXANDER MORISON said that he agreed entirely with Dr. Gossage that dilatation of the heart was due to the loss of tone in the cardiac muscle, and he thought that was the view which had long been held by most observers. Numerous factors were at work in the production of this loss of tone and it was as to the relative part taken by these factors that observers differed. He pointed out that many organs having a rhythmical action were highly endowed with nervous elements and that at an early period of fœtal life rhythmical contractility of the cells existed apart from any direct nervous connexion. He suggested that, as in wireless telegraphy, it was possible that nervous influence might be exerted without any anatomical connexion with muscular tissue.

Dr. E. IVENS SPRIGGS asked what proof could be adduced to show that the extra-systoles were due to contraction of the ventricle. Only a partial picture could be obtained from a tracing of the jugular vein, and because one was unable to obtain evidence of an auricular beat one was not justified in the assumption that there was no auricular systole. He did not think it likely that the extra-systoles arose in the ventricle. In dealing with dilatation Dr. Gossage had not mentioned the effect of mechanical pressure which he considered an important factor. The tone of a muscle was lost because the load was too great. If the cavity of the heart dilated the muscular power had to be increased manifold to overcome the resistance. When the auricle became fully dilated it refused to contract and no impulse passed to the ventricle, and this explained its failure to contract.

Dr. JOHN HAY said that the condition of the myocardium in dilatation had of late been as much considered as the condition of the valves. The point emphasised in the paper was that when tonicity was increased the other functions of

the heart were relatively diminished. He pointed out that Gaskell had shown that sodium hydrate solution perfused through the heart gave rise to an increased tonicity and also to an increased frequency. With digitalis also there was at first slowing, then an increased tonicity and increased frequency. If Dr. Gossage's view was correct there should not be an increased frequency. He did not consider that tonicity was fundamentally the same as contractility.

Professor WINCKEBACH said that he was in favour of the myogenic theory of the action of muscle. The various qualities in the heart muscle might be altered independently, but proof was needed to show that tonicity stood in definite relation to the other qualities of the heart as put forward in the paper. He thought that positive evidence obtained from the venous pulse was most valuable. The application of physiological method to clinical observation was most important, and having obtained certain results it was necessary to refer the question in a definite form to the physiologist to answer.

Dr. GOSSAGE replied.

MEDICAL SOCIETY OF LONDON.

The Bacteriology of Aseptic Wounds.

A MEETING of this society was held on Oct. 22nd, Mr. JOHN LANGTON being in the chair in the unavoidable absence of the President.

Mr. LEONARD S. DUDGEON and Mr. PERCY W. G. SARGENT communicated a paper on the Bacteriology of Aseptic Wounds. They commenced by defining aseptic as a state of being free from septic processes and contrasted this with the term antiseptic and sterile. Aseptic wounds were not necessarily free from bacteria. A large number of microbes had been found in aseptic wounds and particularly the staphylococcus albus. All but five of the series of 50 consecutive operations at St. Thomas's Hospital had been performed without the use of chemical solutions. Chemical substances coming into contact with the albuminous fluids might produce a pabulum on which bacteria might grow. The methods of operation by aseptic means were then described and the precautions adopted in their investigations by Mr. Dudgeon and Mr. Sargent. Observations were made before the wound was closed and afterwards at the several dressings. Out of 45 operations performed without chemicals the wound surface was found to be sterile in only 26. Of the remaining 19 cases the staphylococcus albus was found in pure culture on 13 occasions. Bacteriological examination of a piece of skin cut from the edge of the wound at the conclusion of the operation showed that the patient's skin cleansed without chemicals was sterile in 14 per cent., but when cleansed with carbolic lotion it was sterile in 60 per cent. The exudation was sterile in 24 out of 45 cases and in all the five cases treated antiseptically. In all the cases pyrexia of from 99° to 100° F. followed the operation, similar to that which followed cases of simple fracture, and this was regarded as aseptic fever. Mr. Dudgeon demonstrated and explained a table showing a differential count of the cells from the fluid of a healing wound. 11 out of 45 cases showed a notable increase in the polymorpho-neutrophile cells—cells generally regarded as indicating suppuration—though no suppuration had occurred. Staphylococcus albus was often found in the peritoneum and this dissipated the idea that this organism was solely of skin origin. This microbe probably discharged a physiological function in the healing of aseptic wounds.

Mr. C. A. LEEDHAM-GREEN (Birmingham) exhibited some cultures bearing on the bacteriology of the skin and on the influence of different metals. There was much difficulty in always obtaining the same conditions in such experiments. He had tried the bactericidal power of metal sutures and other metal substances used in operations. Even gold and platinum had a very slight inhibitory action on microbes but lead, tin, and baser metals had more. Copper had the most marked bactericidal power and it was the most powerful inhibitant. A halo free from microbes appeared round copper wire when placed on a Petri dish. Brass and other alloys of copper had a similar effect. Bronze was tolerated in the body better than brass, iron, or any other metal.

Mr. C. B. LOCKWOOD referred to the rise of temperature which occurred with effusion of blood into the peritoneum. He took exception to the definition of an aseptic wound put forward by Mr. Dudgeon and Mr. Sargent. Sometimes this term was used by them clinically, sometimes in a scientific sense. In regard to methods used in their antiseptic cases 1 in 40 carbolic was much too strong; 1 in 60 was amply sufficient. To do without chemicals in old theatres and old hospitals where students had free access was not, he believed, practicable at the present time.

Mr. W. G. SPENCER also referred to what he regarded as the imperfect definition of the term aseptic in the paper and asked whether Mr. Dudgeon and Mr. Sargent regarded staphylococcus aureus as a septic or a non-septic organism. It was not clear under which category they intended to place it.

Mr. J. D. MALCOLM was not altogether prepared to accept the explanation put forward of the effects of intra-peritoneal and other large hæmorrhages and of the methods by which they healed. The staphylococcus could not be held to be necessary to healing as it was not always present in wounds which healed by first intention.

Mr. SARGENT replied.

OPHTHALMOLOGICAL SOCIETY.—A meeting of this society was held on Oct. 18th, Mr. Priestley Smith, the President, being in the chair.—Mr. W. T. Holmes Spicer read a paper on Metastatic Affections of the Eye and showed illustrative cases. The first of these patients was a young man who had a sudden attack of pain in one eye and obliteration of the central part of the field of vision. He was in good general health, except for a large crop of boils on the buttocks from rowing. On examination of the eye three days after the attack of pain a brilliant green mass was seen springing from the centre of the optic disc; it was round, sharply defined, and had no appearance of structure, such as hooklets. Its appearance suggested a parasitic cyst. It continued to grow and was making the patient very ill. It was lacerated with a needle under ophthalmoscopic guidance but it only contained some curdy opaque material like pus. The eye was enucleated. The swelling was found to be an abscess in the substance of the retina, having at its centre a large mass of staphylococci. The patient made a rapid recovery in health. The second case was also that of a young man who had had a large boil on the neck and was suddenly seized with pain in one eye and loss of sight. Ophthalmoscopically he had retinal phlebitis well marked in one eye and slightly in the other. After prolonged treatment one eye got well and the other became "quiet" with loss of sight but two years later became acutely inflamed again and was enucleated. Although very seriously ill at the time the patient recovered promptly with enucleation of the eye, showing it to be the only part affected. The third case was likewise that of a young man who had retinal phlebitis followed by local keratitis profunda after a serious attack of diarrhœa due to ptomaine poisoning. The fourth case was one of a diffuse exudation on the surface of the choroid invading slowly nearly the whole of it and producing in places detachment of the retina. The patient was also a young man suffering from a large crop of boils on the neck. Treatment by antistaphylococcal injections was commenced but he refused to continue it.—Mr. George Coats read a paper on Posterior Scleritis and Infarction of the Posterior Ciliary Arteries. He referred to the first description of posterior scleritis by Fuchs in 1902, and to cases probably similar reported by Knapp, Wagenmann, and Salzer. Only two such cases had been submitted to pathological examination. In the case observed by Mr. Coats the disease was not diagnosed during life, as the eye was already disorganised by iridocyclitis at the patient's first visit. On dividing the globe a peculiar round area, 10 millimetres in diameter, was found above the papilla, in the form of a brown island surrounded by a broad yellow moat or gutter. Within this area the inner third of the sclera and the whole thickness of the choroid and retina were completely necrotic. There was no inflammatory infiltration of the necrotic tissues, but a moderate round-cell infiltration was present in the surrounding living tissues. The other changes in the eye were those of iridocyclitis and secondary glaucoma. As the amount of necrosis was out of all proportion to the amount of inflammation there must obviously have been vascular obstruction. The necrosis was more extensive in the retina than in the choroid, and in the choroid than in the sclera, and this corresponded to the usual wedge shape of an infarction.—Dr. F. W. Edridge-Green read a paper entitled "Observations on Hue Perception." These observations were

made with an instrument by means of which the exact size of a portion of the spectrum which appeared monochromatic was ascertained and then isolated from the adjacent portions. Hue perception was found to be most accurate in the blue and the yellow regions, though in most it was more accurate in the yellow region. Then there was a gradual diminution towards the centre and ends of the spectrum. Green came next, then violet, and lastly red. The facts were in accordance with Dr. Eldridge-Green's theory of colour perception and predicted by it—namely, that the colour perception of different individuals varies with the development of a colour-perceiving centre in the brain, that those with a greater development of this centre see more colours (points of difference) than those with a less development, and that colours appear in a regular order at the successive points of difference in a straight series.

NORTHUMBERLAND AND DURHAM MEDICAL SOCIETY.—The annual meeting of this society was held on Oct. 11th, Dr. I. G. Modlin, the President, being in the chair, and the new officers were appointed.—Dr. T. Beattie was elected President for 1906–07.—The remainder of the meeting was devoted to an exhibition of cases and specimens, among which Dr. David Drummond showed a patient with a Tumour on the right side of the Umbilicus accompanied by pain, constipation, and occasional diarrhœa, with the presence of mucus and blood in the stools and the loss of 3 stones in weight. It was diagnosed as a malignant growth involving the hepatic flexure of the colon. He also showed a patient, aged 18 years, the subject of Rare Congenital Heart Disease—viz., pulmonary regurgitation, which had probably commenced as stenosis, with fusion of the valves and subsequent degenerative changes admitting of regurgitation, along with which was probably associated an opening in the interventricular septum.—Mr. J. Rutherford Morison showed two cases of Joint Disease sent to him for the purpose of amputation. : 1. A case of old Tuberculous Disease of the Ankle-joint where there was ankylosis of the bones but septic sinuses were present. The general condition being good he proposed doing astragalectomy and purifying the sinuses by local application of pure carbolic acid followed by methylated spirit and then packing the wound with gauze. 2. A case of Diseased Knee-joint with Typical Triple Displacement. There was thickening of the lower end of the femur with a septic sinus leading to a sequestrum in the bone. He proposed excising the knee and removing the sequestrum at the same time.—Dr. S. S. Whillis showed, amongst other cases: (1) Hare-lip and Cleft Palate after operation; (2) Hare-lip after operation and Cleft Palate before operation; and (3) a case after Submucous Resection of the Nasal Septum for Obstruction.—Mr. T. G. Ouston showed two patients in whom Laryngeal Papilloma had been removed by laryngo-fissure. The first patient had been operated on four years previously and she sang a song to the meeting in a clear voice. The second case had been operated on one year previously and phonation was good.—Dr. T. L. Bunting showed a case of Chronic Blepharitis treated by the X Rays with Marked Benefit.—Mr. H. B. Angus showed a Large Renal Calculus which he had removed from the left kidney of a man. The symptoms were classical but the skiagram had been disappointing, though a shadow was visible on close examination. The kidney was high up and the stone lay in the lower pole, projecting very little into the pelvis. Hæmaturia was only noticed once and the marked feature in the case was renal colic after lifting heavy weights or active exertion.—Mr. J. Clay showed a case of Persistent Œdema of the Right Side of the Face in a child, aged two years, for which no cause could be found.—Dr. R. P. Ranken Lyle showed a case of a Full-term Fœtus (dead) removed from between the Layers of the Broad Ligament. On attempting to remove the placenta severe bleeding ensued. The placenta subsequently separated.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held at the Medical Institute, Liverpool, on Oct. 19th, Mr. R. Favell (Sheffield), the President, being in the chair.—Dr. D. Lloyd Roberts (Manchester) showed a specimen of Carcinoma of the Clitoris, being the third example of this condition which he had observed within a few months. He also showed a complete specimen of Ruptured Tubal Gestation of about three months' growth.—Dr. William Walter (Manchester) showed a Uterus removed from a single woman, aged 27 years, on account of a myoma rapidly increasing in size. The specimen weighed five pounds and consisted chiefly of a subperitoneal fibro-myoma imbedded in the left broad ligament. The uterus was pushed over to the right side and contained in the fundus a small intramural myoma undergoing cystic change. The left broad ligament required special treatment; it was bunched up and sutured in several places to prevent the formation of a hæmatoma.—Dr. W. F. Shaw (Manchester) read a paper on Chorea of Pregnancy, illustrated with 11 cases which had occurred in the practice of St. Mary's Hospital, Manchester, during the last 15 months. The first two patients were treated on traditional lines—i.e., they were given nourishing diet, arsenic, salicylates, and finally abortion was induced, with the very worst results, for both mothers died and also both children. The succeeding nine patients were treated on the supposition that their condition was due to a toxæmia; they were kept strictly in bed, their diet consisted solely of milk, and elimination was increased by acting on the bowels, skin, and kidneys with purgatives, diaphoretics, and diuretics. Thyroid extract was given to five patients without any definite result. Under the treatment every mother recovered and all the children were born alive except one which could not be resuscitated, although the fœtal heart was heard a little time before delivery. Only four patients gave a history of previous chorea or rheumatism; the remaining seven had histories of shock or worry, though two of these were doubtful. Nine patients were primiparæ; one had one previous pregnancy with chorea; the remaining patient had had two previous pregnancies without any chorea.

CHELSEA CLINICAL SOCIETY.—A meeting of this society was held on Oct. 16th, Dr. J. D. E. Mortimer, the President, being in the chair.—The President, in his opening address, spoke of certain tendencies in practice which the lessons of the past had taught them to avoid in the future. The errors of the past, he considered, had usually been due to a slavish adhesion to traditional rules. Bleeding, for instance, up to the middle of the nineteenth century was looked upon as a panacea, both preventive and curative. People were bled periodically when in health and when out of health; moreover, the symptoms which would now be attributed to loss of blood were regarded as an indication for further bleeding. It was evident that many patients must have died from this bleeding rather than from the injury or diseases for which they were being treated. 20 years ago, when he was medical officer to an asylum, he had opposed the then prevalent idea that general paralysis was necessarily progressive and fatal. He held that it was merely a group of symptoms which might be due to various causes hitherto undiscovered, and that the prognosis must therefore of necessity be uncertain. Other observers had since come to be of the same opinion, and now an organism had been found associated with certain forms of the disease. If this were so it seemed reasonable to suppose that general paralysis of the insane might be influenced just like any other disease depending on a microbe as regards its progress and even its possible termination in arrest or recovery by the varying virulence of the micro-organism, the constitution of the patient, and the conditions under which he was placed; and also the true disease might be simulated clinically and in the post-mortem room by other conditions in which this special organism was absent, but in which inflammation and degeneration of the involved tissues were otherwise induced. There would still be a specific disease, whether it were called general paralysis or by some other name, but it would be "specific" in a sense quite different from that understood by those who had only clinical symptoms and morbid anatomy on which to found their assertions.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held on Oct. 19th, Dr. J. R. T. Conner, the President, being in the chair.—Dr. B. G. Morison read notes of an abnormal case of Purpura, in which the eruption was a comparatively minor symptom; and a marked feature was the appearance in successive order of non-inflammatory subcutaneous colourless non-articular swellings in various parts of the body, which were commonly associated with slight or moderate rises of temperature and lasted roughly from one to three days. Spots, very red and not disappearing on pressure and occasionally purpuric, appeared in successive crops irregularly but most commonly at some part of the leg, thigh, or hip from time to time. The knee-jerks were absent and there were slight hæmic heart murmurs. Improvement took place under tonic treatment and it was noteworthy

that a second threatened attack, being promptly treated by a change to seaside air, disappeared almost at once.—Mr. W. Campbell M'Donnell read notes of a case of Fatal Ante-partum Sepsis. The patient was a very debilitated woman, aged 28 years, in her second pregnancy. She was seen by Mr. M'Donnell the day before her delivery on account of a painful swelling of the face due to a carious tooth. The delivery was normal, but on the day following the skin of the face was red over the swelling, which on palpation was thought to be the right parotid salivary gland. At midday the temperature was 103° F. and the pulse-rate was 130. On the next day the right eyelid was closed and there was intense conjunctivitis; the left eyelid was slightly swollen and red. There were intense left-sided chest pain and much general right-sided bronchitis. Left basic crepitations appeared while the bronchitis disappeared. Cardiac failure supervened and the patient died on the sixth day after her confinement. There was no necropsy but the case was considered to be one of intense septicæmia originating in the carious tooth and independent of delivery.

SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN.—A meeting of this society was held on Oct. 19th, Mr. W. Milner Burgess being in the chair.—Dr. T. R. C. Whipham showed a case of Osteo-arthritis in a girl, aged 13 years; the condition began about Christmas, 1905, in both wrists and hands and then affected the knees and ankles. The spleen was not enlarged, neither were the lymphatic glands. Skiagrams showed the enlargement of the joints to be apparently in the synovial membranes and tissues around, as the bones and cartilages appeared normal.—Dr. Whipham also showed a girl, aged 15 years, who was the subject of Numerous Deformities. The bones of the left side of the face were ill developed and the left pinna was deformed. The left shoulder was elevated and the arm was shorter and with less muscular development than the other. There were gaps in the second and fourth ribs and lateral curvatures in the cervical and upper dorsal regions of the spine. The left scapula was deformed and rotated inwards, and the muscles of the shoulder girdle were shortened, producing torticollis.—Mr. Burgess showed two cases of Hypospadias in brothers. In one child there were three openings, one at the meatus and two in the penile urethra, through the lower of which a probe passed into the bladder. It was doubtful whether later the sexual function could be performed without a plastic operation.—Mr. J. P. Lockhart Mummery showed a child, aged seven years, who has been unable since birth to supinate the forearm. The hands were strongly pronated and the amount of rotatory movement at the wrist was very small. It was uncertain if the condition was due to weakening of the supinators with spasm of the pronators or whether the radius was normally developed.—Mr. H. S. Clogg showed a child with Bilateral Congenital Sinuses in the Lower Lip. On the upper margin of the lower lip on each side was a papilla surrounded on the oral aspect by a groove from which a sinus a quarter of an inch long led inwards to just beneath the mucous membrane of the lip. The sinuses converged but did not meet. The child had also a severe degree of bilateral complete hare-lip and cleft palate.—Dr. Alexander Morison showed a boy, aged eight years, with persistent Arrhythmia of the Heart, characterised by the occurrence at intervals of an extra systole and a long pause. At the moment of intermission there was a pulsation of the right internal jugular vein coinciding with the ventricular extra systole. The child suffered no inconvenience. There was a history of a severe attack of measles.—Dr. J. Porter Parkinson showed two cases of Anæmia Pseudo-leukæmica Infantum, one of which had been treated by the x rays since May last with marked improvement in the general condition, the anæmia, and the blood count, the last being at the present time nearly normal. The spleen was reduced to a quarter of its original size. The second case was treated exactly as the former but was not exposed to the x rays; there was no improvement at all in this case.—Mr. Sydney Stephenson showed a child, aged six and a quarter years, with Curious Deformities of the Eyelids. The palpebral fissures were directed downwards and outwards, exposing more of the eyeballs than was customary. The lower puncta lacrymalia were absent. There was a lack of part of the malar bones and the orbital processes of the frontal bones, causing a deficiency in the lower margin of the orbits.—Dr. C. O. Hawthorne showed a case of Cerebral Diplegia in a boy, aged five years. The spastic condition was most marked in the right leg but exaggerated knee-jerks and extensor plantar reflexes were present on both sides. The left arm was approximately normal but the movements of the right were clumsy, although not spastic. The boy could not speak but apparently understood all that was said to him. He was a first-born child, delivered by instruments. The fundi of the eyes were normal. He had never had any kind of fit.—Dr. Hawthorne also showed a child having a Coloboma of the Iris, Choroid, and Optic Disc and an infant with an Extreme Depression of the Frontal Bone attributed to the use of forceps during delivery.

Reviews and Notices of Books.

Diseases of the Eye: a Handbook of Ophthalmic Practice for Students and Practitioners. By G. E. DE SCHWEINITZ, A.M., M.D., Professor of Ophthalmology in the University of Pennsylvania, &c. With 313 illustrations and six chromo-lithographic plates. Fifth edition. London and Philadelphia: W. B. Saunders Company. 1906. Pp. 894. Price 21*s.* net.

THIS is one of the best text-books of ophthalmology in the English language; indeed, in some respects it is the best. There are many text-books which give an adequate account of the subject, differing from each other only in minor and relatively unimportant details. The present volume is specially suited to the requirements of the advanced student, in that the views of individual workers are simply and accurately stated and are discussed in a manner which displays conspicuous philosophical insight. The book, therefore, approximates in character to a complete system of ophthalmology, whilst it retains the unity and proportions of a moderate-sized text-book. We think that its value might be considerably enhanced by the addition of a short bibliography to each chapter. The enthusiasm of the reader is stimulated by the researches of others and when these are mentioned by name he is likely to be encouraged to pursue his investigations if ready access is given to the original papers.

The present edition is no mere reprint of the last. Certain portions of the book have been entirely rewritten—e.g., those dealing with the pupil and its anomalies, the varieties of conjunctivitis, tumours and cysts of the conjunctiva, unusual forms of keratitis, injuries of the sclera and the detection of foreign bodies within the eyeball, the varieties and pathology of iritis and cyclitis, the pathogenesis and pathology of sympathetic ophthalmitis, and the pathogenesis of glaucoma. The additions, involving an increase in the size of the book by 120 pages, include, *inter alia*, an account of the x ray treatment of epithelioma and trachoma, some forms of conjunctivitis, jequiritol and jequiritol serum, the serum treatment of infected corneal ulcers, some forms of keratitis and scleritis, training of the fusion sense with Worth's amblyoscope, some new operations, and Sweet's method of localising foreign bodies within the eyeball with the Roentgen rays.

Conspicuous in the description of the various diseases is the importance rightly attached to the pathological anatomy, and in this respect, as in others, Professor de Schweinitz shows himself *au courant* with the latest researches. The discussion of treatment is particularly good and whilst the latest innovations receive due consideration there is no tendency to over-estimate them on account of their novelty. The author's good judgment and restraint are noticeable in dealing with new drugs: where experience has taught him that they are useful they are recommended; in other cases they are merely mentioned or ignored. The treatment of diseases of the lacrymal apparatus displays a laudable desire to judge new methods according to their merits and without prejudice. "The operation (of extirpation of the lacrymal sac) is so satisfactory in its results that, in the author's opinion, it should in large measure replace the use of probes and the other measures which have been described."

The literary style of the book is simple and is free from those distressing peculiarities which are so common in many American publications. The illustrations leave little to be desired. We have never seen better reproductions from half-tone blocks representing external diseases and ophthalmoscopic conditions. They are decidedly preferable to the crude coloured plates which often disfigure a text-book. Fig. 145, illustrating a section of the optic nerve-head containing a deep glaucomatous excavation, might with advantage be replaced by one passing through the centre of the nerve. The six coloured plates depicting conditions of the fundus are above the average.

Lectures on Clinical Psychiatry. By Dr. EMIL KRAEPELIN, Professor of Psychiatry in the University of Munich. Authorised translation from the second German edition. Revised and edited by THOMAS JOHNSTONE, M.D. Edin., M.R.C.P. Lond. Second English edition. London: Baillière, Tindall, and Cox. 1906. Pp. 352. Price 10*s.* 6*d.*

THE first edition of this work was reviewed in THE LANCET of July 9th, 1904. In this, the second edition, the book has been revised and two new lectures and some fresh clinical cases have been inserted. The principal forms of insanity as illustrated in Professor Kraepelin's wards are herein dealt with in the form of lectures, 32 in number. These are interesting and helpful, especially from the point of view of diagnosis. Certain of them may be commented upon. Thus the third lecture describes the fundamental characteristics of dementia præcox. The state of katatonic stupor and that of katatonic excitement are described in other lectures, from which the inexperienced might draw the inference that these states are separate and distinct from dementia præcox. States of depression and of megalomania in general paralysis are the subjects of lectures. This disease, it is said, "seems always to develop after syphilitic infection." Cases not of syphilitic origin can scarcely, it is considered, be regarded as similar in kind to the rest of those observed. But on the question of the relationship of syphilis to general paralysis there is still much diversity of opinion. The maniacal depressive state, to which Professor Kraepelin more especially has drawn attention, is illustrated by cases. The value of the prolonged warm bath in conditions of mental agitation is emphasised; for various reasons, chief amongst which is probably the question of mechanical restraint, patients are largely deprived of this valuable means of treatment in this country. Lecture XII. is amongst the most interesting; it deals with insanity in acute diseases (typhoid fever, erysipelas, articular rheumatism, and so on) and therefore probably due to toxæmia. Here, as elsewhere, differential diagnosis is well handled. The lectures on epileptic insanity, varieties of delirium, and puerperal insanity are perhaps somewhat sketchy. There is a good description of paranoia, followed in the succeeding lecture by illustrations of the states designated as "paranoidal forms of dementia præcox"; as to these, it has to be observed that their title to such a designation is still in dispute. A lecture is devoted to morphinism and cocainism; cocaine, it is pointed out, is far more harmful than morphine and therefore should not be employed, as it often is, for the purpose of breaking the morphine habit. We are informed that it is easy for the victim of the morphine habit to obtain this drug in Germany; legislation against the evil is at present powerless. A description of "hysterical insanity" would apply equally well to a case of ordinary hysteria. The subject of insanity after injuries to the head is considered and it is properly pointed out that a connexion between the two conditions is often too readily assumed, especially if a long interval exists between the injury and the onset of the disease. For reasons given operative interference in these cases is undesirable. There is a lecture upon "Congenital States of Disease," which rather comprehensive title covers a description of sexual perversion, of a condition resembling paranoia, and of other ill-defined states, for the inclusion of which under this heading there seems no sufficient reason; at any rate, it is difficult to see why the states of imperative conception and morbid doubt, which are separately considered, should not also be included under the above title. "Morbid Personalities" are next considered, and thereafter "Morbid Criminals and Vagabonds." The term "criminal" is qualified by such adjectives as "morbid," "habitual," and "professional." The question of the soundness or otherwise, psychologically, of the criminal is one which we prefer to leave to the Italian school of criminology. Our Poor-law administrators will learn with some solace that the "terrible plague of vagabondage" extends even to Germany but would probably receive with impatience the suggestion that the tramp is deserving of psychological study. Professor Kraepelin is of opinion that the great mass of vagabonds consists essentially of the feeble-minded, the remainder largely of "pyschopaths" of different kinds. The last two chapters deal with congenital defect and cretinism, and these instructive lectures are brought to a close by suggestive observations as to the lines of work which, in the opinion of the experienced author, are most likely to lead to an advance in our knowledge of mental diseases.

Clinical Obstetrics. By ROBERT JARDINE, M.D. Edin., F.R.S. Edin. With 96 illustrations and a coloured plate. Second edition. London: Rebman, Limited. 1906. Pp. xxviii.-610. Price 17*s.* net.

WE welcome the appearance of a second edition of this interesting work. Dr. Jardine's experience is a very large one and he has made good use of his exceptional opportunities. The book retains its essentially clinical character. It has been thoroughly revised and a considerable number of interesting cases and some 50 new illustrations have been added. Amongst the most important additions are the details of a further series of nine cases of eclampsia, making a total of 30 cases of which the clinical histories are given. It is a great pity that the author has not tabulated his results in a readily accessible form. The furnishing of complete clinical histories in such a book is not a practice with which we agree. They are not as a rule read by students and for other readers tables of results are just as important and much more interesting. We think that such detailed histories, while very necessary in original articles, are out of place in a text-book.

Dr. Jardine claims that his method of treating eclampsia by getting the skin to act, opening the bowels, and promoting the action of the kidneys by the infusion of saline solution containing acetate of sodium of the strength of one drachm to the pint is a very successful one. In many cases he also bleeds the patient, combining this measure with transfusion. The administration of morphine he has given up and he only interferes with the course of the labour if the fits recur in spite of all treatment. This mode of treatment is a rational one but it must be remembered that good results not infrequently follow no treatment at all, and in view of our ignorance of the exact nature of the disease it is extremely difficult to form any correct judgment as to the effect of different therapeutic measures. What we require is a large series of cases in which no treatment at all has been carried out so that we may come to some clear conclusions as to the natural course of this perplexing malady.

The book seems to have been well revised. The tables given in the appendix at the end of the volume have not been altered but, as we pointed out in our review of the first edition, they are most instructive and valuable and show

in a very striking manner the rich field of clinical material which exists in this branch of medicine in Glasgow. We can strongly recommend this work to those who are interested in the practice and the teaching of clinical obstetrics. Even if they do not agree with all the author's conclusions, at any rate he furnishes them with the necessary material for forming a just conclusion as to the value of his methods of practice.

The Ophthalmoscope and How to Use It. By JAMES THORINGTON, A.M., M.D., Professor of Diseases of the Eye in the Philadelphia Polyclinic, &c. London: Rebman, Limited. 1906. Pp. 298. Price 11*s.* net.

"THIS book has been written for the student and general practitioner who desires to obtain a working knowledge of the ophthalmoscope with the interpretations of its findings and has not the time, ordinarily, to study a large text-book on the diseases of the eye, in which the subject is too deeply embedded for immediate comprehension." We are not prepared to endorse such an apologia. In no subject is a long and arduous apprenticeship so necessary as in ophthalmology. The intelligent use of the ophthalmoscope entails a thorough knowledge of the principles of optics and of the optical conditions of the normal and abnormal eye, as well as a mastery of difficulties of technique which is attainable only by prolonged practice. If the student has not the time to study a good text-book and the opportunity to become well acquainted with the practical details of ophthalmoscopy it is the fault of the system by which he is trained and such a student is not fit to become a general practitioner. Doubtless Professor Thorington is endeavouring to supply the demands of a class which still exists in the United States, but which is fast becoming obsolete in England since the introduction of compulsory instruction in ophthalmology. We think that he would have been better employed in urging reform in the medical curriculum.

The book is in part an elementary text-book and in part an ophthalmoscopic atlas. After describing the ophthalmoscope and its use, including the somewhat complicated optics of the direct and indirect methods, with calculations of the magnification of the ophthalmoscopic image, the author devotes a chapter to elementary optics. We advise the reader to master Chapter II. before he attacks Chapter I. Then follows a description of the anatomy and anomalies of the eye. One or two inaccuracies may be noted. There is no hyaloid vein; the fovea centralis is not about one millimetre in diameter. Anterior polar cataract is not always a congenital condition; the term posterior polar cataract usually includes posterior cortical cataract as well as the persistent posterior vascular sheath of the lens, which is not a true cataract, being situated outside the lens. Opaque nerve fibres are said never to occur at the macula; at least one such case has been published.

The description of the normal fundus is followed by a chapter on changes in the cornea, aqueous, iris, lens, and vitreous. Reference is made to "the disease known as Descemetitis." We do not agree with the remark that "an excellent way to obtain the iris reaction is to use the 5-volt lamp of the luminous ophthalmoscope and as the patient fixes the lamp to suddenly turn on the electric current." A reaction to accommodation is very liable to be mistaken for a reaction to light by any such method. This sentence is a fair example of the author's literary style, but such expressions as "if the eyes have not been 'glassed'" and "the nearby object" are particularly irritating. More than half the book is thus devoted to elementary and preliminary matter. In the remainder most of the ordinary ophthalmoscopic appearances in disease are described; in many cases the treatment is indicated. There are 12 coloured plates which are somewhat crude. They are reproductions of drawings taken from actual cases but are not in every instance so typical as might be desired considering the object with which the book has been written. We have seen better ophthalmoscopic drawings by the same artist, but the defects may be due to faulty reproduction.

Student's Manual of Medical Jurisprudence and Public Health. By G. HAXTON GIFFEN, L.R.C.P. & S. Edin., F.R.C.S. Irel., D.P.H. Cantab., Senior Demonstrator in Anatomy, Minto House, Edinburgh. Second edition, revised and enlarged. Edinburgh: William Bryce; London: Simpkin, Marshall. 1906. Pp. 372. Price [5*s.*

AFTER a perusal of this volume we can confirm the opinion which we expressed in our review of the first edition of the work—namely, that it contains sufficient information to enable a student to pass the final examination of the Colleges, as far as respects the subjects with which it deals.

Little change has been made in this edition in the pages dealing with forensic medicine and toxicology. A little fresh material has been added, such, for instance, as a description of the biological test for blood. The method of performing the test is, however, very briefly given and no mention is made of the great difficulties that arise in carrying out the procedure, so that practically only an observer with long experience can hope to attain trustworthy results. The portion of the book on public health has been very rightly enlarged so as better to meet the requirements of medical students. Full consideration is now afforded to "communicable diseases"; instructions are given as to the duties of practitioners when brought into contact with cases of an infectious character. The author has attempted a hopeless task in trying to describe in a few lines the preparation of the antitoxin of diphtheria; it would perhaps have been wiser to omit entirely reference to a proceeding which only an expert can properly carry out. A few remarks on meteorology have also been introduced, which may prove interesting to country practitioners.

LIBRARY TABLE.

Simple Introductory Lessons in Midwifery. By M. LOANE. London: The Scientific Press. Pp. 60. Price 1*s.* net.—The author has written this little manual in the hope that it may prove of help to those women who wish to pass the examination of the Central Midwives Board and who although perhaps with some practical experience are so entirely ignorant of the theory of midwifery and so completely unacquainted with the language in which it is usually set forth that they are unable to profit by any ordinary course of lectures on the subject. These lessons are intended to familiarise such students with the vocabulary which they will be required to know, and with a view to doing this each lesson is followed by a short section giving the meaning and derivation of the technical words used. This is a useful little book and no doubt one which will be of service to the class of persons for whom it is intended.

The Influence of the Menstrual Function on Certain Diseases of the Skin. By L. DUNCAN BULKLEY, A.M., M.D. London and New York: Rebman Company. 1906. Pp. 108. Price 5*s.* net.—The author of this book maintains that in many diseased conditions of the skin there occur certain well-marked changes in association with, and dependent upon, each monthly period. These he attributes either to the general changes which occur in the whole body at each monthly period, or to some auto-intoxication of genital origin, or to nervous reflex irritation from the congested condition of the uterus and the ovaries. Dr. Bulkley shows very certainly that there is a definite relationship between certain skin diseases and menstruation but we are glad to see that in the chapter on treatment he points out that

treatment directed to the pelvic organs alone in these cases is not likely to produce much result, they must be treated on general principles. The book is an interesting one and the author makes good his contention.

JOURNALS AND MAGAZINES.

The Bio-Chemical Journal. Edited by BENJAMIN MOORE, M.A., D.Sc., and EDWARD WHITLEY, M.A. Vol. I., Nos. 8, 9, and 10. Pp. 100. September, 1906. Published by the Bio-Chemical Department, Johnston Laboratories, University of Liverpool. Price 15*s.* per vol. of about 480 pages.—The articles contained in these numbers are: 1. On the Use of Soluble Prussian Blue for Investigating the Reducing Power of Animal Bioplasm, by Davis Fraser Harris, M.D. Glasg., lecturer on physiology, and James C. Irvine, D.Sc., lecturer on organic chemistry, from the Physiological and Chemical Laboratories, United College of St. Salvator and St. Leonard, University of St. Andrews. The authors of the article show that potassio-ferric-ferrocyanide injected into blood-vessels *intra vitam* and retained in them after death is transformed into the green or white di-potassio-ferrous-ferrocyanide, and thus demonstrate the bio-chemical reducing power which living tissues possess. This change is not due to the alkalinity of the tissues, though this condition provides for reduction in an alkaline medium. By perfusing the soluble Prussian blue and gelatin through a surviving kidney until a flow from the ureter of the leuco- or pale green salt has been established, the reducing power of the renal tissue in particular can be strikingly demonstrated. The chief factor in producing this result is pressure but in addition there is the chemical basis of the respiratory phase of tissue respiration. 2. A Contribution to the Experimental Pathology of Catarrhal Jaundice, by Roderick Tate Sutherland, M.B., C.M. Glasg., from the physiological laboratory, University of Melbourne. Dr. Sutherland found that after ligature of both the pancreatic and biliary ducts in dogs, prosecretin was still present in the mucous membrane of the duodenum and jejunum. The contents of the duodenum and jejunum were found to be acid for a distance of five feet eight inches but beyond this point were alkaline. 3. The Action of Carbon-Dioxide on the Respiration of the Goldfish, by W. A. Osborne and Edith Muntz. Tensions of carbon dioxide greater than 1·7 per cent. of an atmosphere produced temporary inhibition of respiration in the goldfish comparable with the closure of the glottis in mammals. Rise of the fish to breathe near the surface was induced by a tension of carbon dioxide varying from 3·2 to 4 per cent. of an atmosphere. The sequence of narcotic manifestations produced by carbon dioxide in the goldfish is cessation of voluntary movement except when irritated, loss of head to stream reflex, and loss of equilibration. 4. A Note on the Osmotic Effect of Various Strengths of Different Salts upon Cell Volume, by Herbert E. Roaf, M.D. Toronto, British Medical Association Scholar. Dr. Roaf's experiments on tadpoles have led him to the conclusion that the current view that when plasmolysis occurs the solution used is isotonic with the cell contents needs careful revision. 5. A Contribution to the Study of the Digestive Gland in Mollusca and Decapod Crustacea, by Herbert E. Roaf, M.D. Toronto. 6. Variations in the Hydrochloric Acid of the Gastric Contents in cases of Carcinoma in Man, by F. W. Morton Palmer, M.A., M.B. Cantab. Of 13 cases of non-gastric carcinoma only two showed effective gastric acidity. 7. The Staining Act, an Investigation into the Nature of Methylene blue-eosin Staining, by J. O. Wakelin Barratt, M.D., D.Sc. Lond. Dr. Barratt finds the staining act of this colouring agent dissolved in alcohol is a chemical reaction and whether dissolved in alcohol or water exhibits colloidal characters. 8. Secretin in Relation to Diabetes Mellitus, by F. A. Bainbridge, M.A., M.D. Cantab., of Guy's Hospital, and A. P. Beddard, M.A., M.D. Cantab., of Guy's Hospital. 9. Further Observations on the Treatment of Diabetes Mellitus by Acid Extract of Duodenal Mucous Membrane, by Benjamin Moore, M.A., D.Sc.; Edward S. Edie, M.A., B.Sc., Carnegie Research scholar; and John Hill Abram, M.D. Lond., of the Royal Infirmary, Liverpool. The administration of the extract of the duodenum was in some instances very beneficial in diabetes. The last part (No. 10, October, 1906), contains the following articles: 1. On Glycosuria caused by Excess of Carbon Dioxide in the Respired Air, by Edward S. Edie, M.A., B.Sc. The conclusions to which the author has been led from his experiments on rabbits, dogs, and cats are that the glycosuria found after partial asphyxiation is not due, as hitherto supposed, to lack of oxygen but to the high percentage of carbon dioxide in the respired air; the presence of from 10 to 15 per cent. of carbon dioxide by volume in the respired air leads to glycosuria even if the proportion of oxygen in the air be increased; a reduced percentage of oxygen as low as to 6 per cent. unaccompanied by increase of carbon dioxide never leads to glycosuria; the anæsthesia caused by carbon dioxide is probably due, as in the case of other anæsthetics, to the combination of the anæsthetic with protein setting free the carbohydrate. 2. Trypsin and Antitrypsin, by S. G. Hedin. 3. An Antitryptic Effect of Charcoal and a Comparison between the Action of Charcoal and that of the Tryptic Antibody in the Serum, by S. G. Hedin. This part completes the first volume of the *Bio-Chemical Journal* and contains the title-page and table of contents.

Man.—In the September number a short paper on various native customs followed in some of the Solomon Islands in the South Pacific is contributed by Mr. C. M. Woodford. The paper is illustrated by three-quarter length portraits of individuals tattooed in elaborate patterns. The tattooing needle consists of the wing bones of the frigate bird and the colouring medium is made from the charred nut of the calophyllum inophyllum.

Red Cross and Ambulance News.—This new journal, which is described in its sub-title as the official organ of the St. Andrew's Ambulance Association and Corps, makes its first appearance this month. The St. Andrew's Ambulance Association received its charter of incorporation in 1899 and has its headquarters in Glasgow, so that ambulance work in the northern division of the kingdom is the principal feature of the present issue, but the editor promises that Red Cross matters in general will be dealt with. The first article is a plea for Red Cross Work, by Sir John Furley, C.B., and the second one is on Red Cross Work in Scotland, by Dr. George T. Beatson. There is also an illustrated description of a motor ambulance wagon built by Argyll Motors, Limited, of Alexandria, Dumbartonshire, and recently acquired by the association for the Glasgow district service. The new journal is published at the offices of the association, 176, West Regent-street, Glasgow.

THE NATIONAL TEMPERANCE LEAGUE.—The Jubilee Celebration and convention of the National Temperance League, which was instituted in 1856, was held on Monday, Oct. 22nd, in the Council Chamber, Caxton Hall, Westminster. On Tuesday, Oct. 23rd, a special meeting was held at the Mansion House under the presidency of the Right Hon. the Lord Mayor. The speakers included Miss Agnes Weston, so well known for her admirable work in connexion with the navy, the Right Hon. Lord Methuen, Mr. J. Herbert Roberts, M.P., and Dr. C. F. Harford. On the same day at the convention sitting at 10.30 A.M. in Sion College Hall Section I. was devoted to "Science and Education." The president of the section is Sir W. H. White, K.C.B., F.R.S., and the vice-presidents are Professor G. Sims Woodhead and Mr. W. McAdam Eccles. The associate is Dr. T. N. Kelynack.

THE LANCET.

LONDON: SATURDAY, OCTOBER 27, 1906.

The Harveian Oration.

THERE are few exercises more edifying or more stimulating to advance than a historical study of the gradual evolution and growth of a great truth; indeed, the knowledge of the previous work regarding any particular subject is part of the necessary training for anyone working at that subject, and such historical study forms an essential to the earnest scientific worker in almost all departments of knowledge, whether speculative or experimental. In the brilliant and inspiring Harveian oration delivered before the Royal College of Physicians of London by Professor WILLIAM OSLER on Oct. 18th a real service has been rendered to the profession of medicine in a manner wholly admirable. The subject chosen by the Harveian orator was the Growth of Truth as illustrated in the Discovery of the Circulation of the Blood. Professor OSLER has a world-wide reputation as an accomplished physician, a charming essayist, and a brilliant orator, but we can imagine him almost overwhelmed by the magnitude of the task which he set himself to perform; indeed, he himself confesses so much, for while the main facts concerning HARVEY'S great work have been told, and well told, times without number, the study of the actual growth and progress of the truth which he nunciated towards general acceptance requires a knowledge of contemporary seventeenth-century thought and manners hard indeed to come by. To say that success has attended his efforts is hardly to express our opinion of the really great address delivered by Professor OSLER, for it is at once both a literary and a philosophical feast. Professor OSLER has a distinct and pleasing style; he is often epigrammatic and frequently allusive with suitable quotations, while he brings a reverence for his subject and a vivid imagination to bear in his descriptions which compel attention. When he lingers with an almost affectionate regard to describe the great lecture at which HARVEY'S discoveries were first given forth and to picture the actual members of his audience and their probable feelings toward the new doctrine which they then heard for the first time, he becomes vividly realistic and gives a picture of contemporary medical life hard to surpass. But it is the philosophical rather than the descriptive character of the oration which compels attention. It is important for all scientific workers to realise that in science there can be no such thing as absolute truth; the finite character of human knowledge must of necessity render the presentation of a truth at any time relative. It is, indeed, "conditioned by the state of knowledge at the time of its announcement," and therefore as general knowledge advances the statement of the truth may alter as presented in terms of that knowledge. Adopting Professor OSLER'S happy illustration, we may say that truth, like a living organism, grows and "may suffer all the hazards incident to generation and gestation." On the other hand, though truth frequently in its progress and growth meets with opposition, and indeed with delays and even retrogressions, its ultimate triumph is one of the certainties of human endeavour.

PLATO in the "Theaetetus" describes three states of knowledge—acquisition, latent possession, and conscious possession, and in such three stages Professor OSLER maintains the growth of truth may be followed. He illustrates this by the history of the knowledge of syphilis—centuries of acquisition until during the last quarter of a century we have obtained latent possession of the cause, recently brought to the stage of conscious possession in the brilliant discovery by the lamented SCHAUDINN of the spirochæta pallida. So, again, in regard to the cancer problem, we are in the stage of latent possession awaiting "the final touch—the crystal in the saturated solution—to give us conscious possession of the truth." These same three stages are admirably illustrated in the history of the discovery of the circulation. The rich acquisitions of the sixteenth century—notably the work of VESALIUS in giving to medicine a new and accurate anatomy, followed by the anatomical researches of FALLOPIUS, COLUMBUS, and FABRICIUS—had prepared the way for a newer physiology; but in spite of this advance on the anatomy of GALEN his physiological views reigned supreme and were not in any sense disturbed until the general acceptance of HARVEY'S work towards the middle of the seventeenth century. GALEN knew of the lesser circulation but his views of the functions of the heart and arteries remained unassailed until HARVEY'S lecture on April 17th, 1616, although for years there had been practically a latent possession of the knowledge of the circulation, for even HIPPOCRATES himself seems to have had some "glimmerings" of its existence, as had also both SARPI and CAESALPINUS, while in the sixteenth century SERVETUS and COLUMBUS fully recognised the lesser circulation. Professor OSLER, in tracing the actual conscious possession of the truth of the general circulation by HARVEY and his demonstration of it by the method of experiment, the "Inventum Mirabile" of DESCARTES, and the "Novum Organum" of BACON, rightly regards the application of this new method as the great advance made by HARVEY rather than the actual demonstration of the circulation made by it. It was in "the addition of the hand as an instrument of the mind" in the acquisition of knowledge that the great merit of HARVEY'S work lay.

A most interesting section of the oration is devoted to a brief analysis of the educational career of HARVEY at Cambridge and at Padua. Professor OSLER likes to think that at Caius College the memory of JOHANNES CAIUS may not have been without influence in directing the energies of the young student from Folkestone. But that his interest in the study of the heart and blood-vessels was aroused and fostered by his association at Padua with FABRICIUS there can be little doubt, for FABRICIUS at that time was deep in the study of the anatomy and embryology of the vascular system and published his celebrated work "De Venarum Ostiolis," in which he regarded the valves as checks or dams to the flow of blood, so that it would not irrigate too rapidly and overflow the peripheral vessels to the deprivation of the upper parts of the limbs. It may well have

been, thinks Professor OSLER, this ingenious speculation which suggested to HARVEY the true explanation which he so triumphantly demonstrated after long years of work. One of the most striking characteristics of some of the greatest of investigators and thinkers has been their extraordinary reticence in regard to their discoveries or even reluctance to publish their work until years after it has been carried out. Among the notable examples of this quoted in the oration we find COPERNICUS who is said to have kept back his "Treatise of Revolutions" for 30 years; NAPIER who spent 20 years developing the theory of logarithms; BACON who kept his "Novum Organum" for 12 years; ISAAC NEWTON who having discovered the secret of the "cosmic circulation" waited 20 years before publishing his "Principia"; and DARWIN who allowed 17 years to elapse before bringing out his "Origin of Species." It is therefore no surprise to find HARVEY allowing 12 years to pass after his lecture before publishing his work "De Motu Cordis," his reason apparently having been the dread of the opposition and prejudice to views so subversive of the generally accepted and old-established doctrines. It is an interesting fact to find that the great minds so vastly in advance of their fellows often voluntarily wait long years for the time to ripen for the acceptance of their views before expounding them. The study of the subsequent history of the views of HARVEY until their general acceptance affords the usual story of misconception, of prejudice, and of opposition, and is graphically and succinctly sketched by Professor OSLER. He tells us that the publication of the book in 1628 created no great stir; only one work was written criticising it from the Galenical standpoint—namely, that published by PRIMROSE in 1632, while not until 1641 was a special treatise in favour of HARVEY'S work produced—that by Sir GEORGE ENT, his pupil and friend. At Oxford and Cambridge HARVEY'S views soon found acceptance, at the latter through the championship of the celebrated GLISSON and subsequently of WALLIS, but many years elapsed before the new views found their way into the text-books of the day. In 1651, however, HIGHMORE, a pupil of HARVEY, gave an able exposition of his master's views and urged his readers to study the original work. In Holland and Germany HARVEY'S work found an earlier acceptance than in France, partly, no doubt, due to the strenuous advocacy of DESCARTES. In France, however, the opposition of men like GUI PATON and of RIOLAN delayed the general acceptance, so that official recognition in that country was postponed until 1673, when LOUIS XIV. founded a special chair at the Jardin des Plantes for the propagation of HARVEY'S work. So serious was the opposition of RIOLAN, an old friend of HARVEY, that on two occasions we find the latter replying to his criticisms but RIOLAN could not be convinced and remained to the end opposed. This attitude of mind towards new discoveries which subvert established and old ideas is one which has persisted to our own day and although new discoveries are more quickly assimilated it may be doubted if this is owing to any greater receptivity on our part; rather is it due to the greater array of workers and the greater hurry of to-day. There is, indeed, a sadness in Professor OSLER'S statement of the almost universal occurrence of the tyranny of the established, a sadness the greater for its general accuracy. "Sooner or later," he says, "insensibly, unconsciously, the iron yoke of conformity is upon our necks and in our minds, as in our bodies, the force of habit becomes irresistible. From our teachers and associates, from our reading, from the social atmosphere about us, we catch the beliefs of the day and they become ingrained—part of our nature. ..... How eminent soever a man may become in science he is very apt to carry with him errors which were in vogue when he was young—errors that darken his understanding and make him incapable of accepting even the most obvious truths."

This memorable oration shows us one of the means of counteracting such a spirit of narrowness for a study of history—the biography of the mind of man, as Professor OSLER epigrammatically defines it—is perhaps the best antidote to the narrow outlook and is most likely to preserve the open mind. In no profession more than our own is such a study of value; indeed, the medical practitioner should always be acquainted with the history of the great names of his profession. We may recall that CHAUCER'S Doctour of Phisyk[1] was not behind in this respect:—

> "Well knew he olde Esculapius,
> And Deiscorides and eek Rufus;
> Old Ypocras, Haly and Galien;
> Serapion, Razis and Avicen;
> Averrois, Damascien and Constantyn;
> Bernard, and Gatesden and Gilbertyn."

But Professor OSLER'S oration deserves a far wider hearing than that of the medical profession. It can be read with advantage by scientific workers in any field of inquiry, for it teaches many lessons and, indeed, contains the very alphabet of the scientific worker. It teaches persistence, patience, and the broad outlook upon all problems and inculcates freedom from prejudice and the slavery of conventional thought.

Food Inspection.

No disinterested person will deny that a high standard of excellence should be maintained with respect to our food-supplies. Under existing conditions this can only be done by a system of thorough inspection. Hitherto it has been considered only too frequently that the object of inspection has been achieved by the detection and destruction of meat and other foodstuffs which were found to be capable of causing definite and specific diseases. It is time that this erroneous impression should be corrected and in the discussion on food inspection at a recent meeting of the Incorporated Society of Medical Officers of Health reported in our issue of Oct. 20th, p. 1071, Dr. GEORGE NEWMAN struck quite the right note when he said that it was essential to a healthy physical life that the food consumed should be both nutritious and palatable and that the real object of administrative control and inspection was to secure a pure food supply. There was some difference of opinion among the medical officers of health present at the meeting referred to as to whether inspection, more especially as regards meat and milk, should be at the source of the supply or when the particular food was deposited for sale. Dr. NEWMAN insisted very strongly that it should be on both occasions. It appears to us that the view which he takes is the correct

[1] Canterbury Tales, Prologue, lines 429, et seq.

one; for it must not be forgotten that meat and milk and prepared foods, such as sausages and tinned meats, require to be examined not only as to their intrinsic nutritive value but also with respect to the conditions under which they are produced and stored until they ultimately reach the hands of the consumers. Inspection to be thorough, and thoroughness is surely what we aim at, should begin at the source and should be carried right through to the place of sale. Where meat is concerned it will no doubt be found necessary to abolish private slaughter-houses and to replace them by public abattoirs. Already in many large towns the latter are in use but in very few places has private slaughtering been entirely done away with. Even in those towns where local Acts of Parliament provide for the compulsory closing of private slaughter-houses difficulties have arisen owing to the uncertainty as to what compensation should be paid to the displaced owner. The advantages of, nay the necessity for, public slaughter-houses being admitted it may well be asked whether the time has not arrived for the compulsory closing in urban districts of all private slaughter-houses either with compensation to the owners or by placing a time limit to their use. It may be contended that this would drive some of the town butchers into the adjoining rural districts where, inspection being lax, meat of an indifferent quality would find its way into the towns. Such a result has indeed happened to a small extent in Cardiff where no private slaughtering is carried on. One method of preventing this is the adoption of a system of marking sound meat after inspection in the manner advocated by Sir SHIRLEY F. MURPHY so long ago as 1898.

We have spoken of possible lax inspection in rural districts and this leads us to insist upon the importance of uniformity of administration. The existing conditions have been described as chaotic. To quote Dr. NEWMAN, "In one district there is a meat inspector, in another there is not; in one district one method of practice obtains, in another quite a different method or no method at all." It might perhaps be worth while for those whose business it is to remedy this chaotic and supremely unsatisfactory condition to inquire whether it is in any way connected with the terms under which many medical officers of health are appointed. Many of them come up annually for re-election at the hands of an electing body some members of which may hold views upon meat inspection not altogether in accordance with those of the health officer. It cannot be denied that in this as in the other duties assigned to the medical officer of health it is of the utmost importance that his independence of action should be absolutely assured. The qualifications and previous training which go to make a successful meat inspector are questions which require serious consideration. Some medical officers of health, including Dr. EDWARD WALFORD, are of opinion that he should be a veterinary surgeon and it appears that in Cardiff, upon the request of the local butchers, the corporation appointed a chief meat inspector who had veterinary qualifications. There are others, again, among whom are Dr. W. COLLINGRIDGE and Dr. NEWMAN, who place first in importance practical training as a butcher, though they do not ignore the advantage of veterinary knowledge. Except in a few of the large towns, where specially qualified meat inspectors are employed, an inspector of nuisances may at any moment be called upon to decide in the first instance whether certain pieces of meat or fish are or are not unsound or fit for human consumption. It is true that he has the medical officer of health to appeal to in cases of difficulty but in large country districts such an appeal may be difficult of accomplishment. The examiners of the Royal Sanitary Institute and of the Sanitary Inspectors' Examination Board have of late years insisted upon a high standard of knowledge with respect to unsound meat but there must still be many inspectors of nuisances holding office who have only a very superficial knowledge of the appearance of meat and fish which is unfit for food.

During the past few years there has been an enormous increase in the consumption of prepared meats and tinned meats and their very mode of preparation and style of distribution have increased the difficulties of inspection. That inspection is needed is evident from a recent report of Mr. A. WYNTER BLYTH in which he states that upon examining six samples of brawn from Chicago he found them filthy, containing dirt, bits of straw, woody fibre, hair, hogs' bristles, shreds of skin with the bristles attached, and other matters, giving the impression that some portion of the contents were made up of floor sweepings. An English sample was nearly as bad. Dr. NEWMAN has also recorded the presence of tuberculous pus in sausages, diseased horse-flesh in potted meat, and decomposing animal matter in potted salmon and shrimps. At present the prinicipal inspection of this kind of food is when it is placed on sale in the shops. But this surely is a clumsy, unscientific, and utterly ineffectual form of inspection. The easiest, most scientific, and most effectual method would be by inspection from the very beginning, starting with an examination of the animal before slaughter. If such a thorough and rigorous inspection as we have indicated is to be enforced the question arises whether the cost entailed should be borne by the local sanitary authority in whose area are situated the premises requiring inspection or whether the Imperial funds should not bear at any rate a proportion of the charge. The whole question of food inspection is a wide and complicated one and it is bound up with side issues which render it necessary to deal with it in no narrow and parochial spirit but in a broad and comprehensive manner. Dr. NEWMAN'S paper and the discussion which it evoked cannot fail to be of service in solving some of the problems which surround the subject.

Medical Men and Municipalities.

BEFORE the next number of THE LANCET comes into the hands of our readers the first day of November will have brought with it the election of municipal authorities throughout the country, and it is hardly necessary to say that no other section of ratepayers, and consequently of electors, possesses such facilities for the exercise of sound judgment in relation to the choice and support of candidates as those which flow from the practice of the medical profession and from the knowledge of public requirements which that practice brings. It is lamentably true that, in an

enormous majority of cases, this choice and support are determined by what are broadly called political considerations—that is to say, by the adherence of the candidates to one or another of the prominent political parties which may at the time be struggling for general ascendency in the State; and it would seem to be manifest that such an adherence affords no guarantee either of a comprehension of municipal necessities or of a capacity to supply them if they were comprehended. The effects of the present system of election are various, and one of the most conspicuous of them is the fact that the control of a municipality happens to be a common stepping-stone to the Imperial Parliament; and another, not less important, is that municipal contests are largely training grounds for Parliamentary ones, and as such afford many opportunities to those who take part in them of acquiring at least the beginnings of local political power and influence. There is no more common complaint, among either real or *soi-disant* medical reformers, than that such influence is wanting to the profession, and that, as a not unnatural consequence, its most legitimate aspirations receive but slender support from those who might easily contribute to their realisation. In such circumstances can there be any doubt that it would be the part of wisdom, among medical practitioners generally, to follow the example of their neighbours, and to make their opinions felt in municipal elections, not only for the sake of promoting the success of the best candidates, as judged by their probable capacity for fulfilling the duties to be committed to them, but also for the sake of exerting influence in contests which, after all, are not only foreshadowings of more important ones, but are also preparations for them in the organisation and control of the machinery by which they are conducted, or by which local opinion is controlled or guided. We cannot but regard it as a duty on the part of every medical man who thinks that increased parliamentary influence would be serviceable to the profession to endeavour to promote its attainment through the comparatively humble means afforded by the municipal elections. A clear recognition of the needs of the locality and an impartial estimate of the probable contribution of each candidate towards their fulfilment must give weight to the opinions of the medical man expressing them, and enhance the value of these opinions when afterwards expressed with regard to questions of wider scope. It is impolitic to despise the day of small things; and it should not be forgotten that municipal contests are the training grounds of Englishmen in political thought, and the arenas in which the aspirant to political power may often first learn to tread warily and firmly.

Municipalities are infinitely varied, but it would perhaps not be impossible to arrange them under a comparatively small number of types. Some are ambitious; and their ambition usually assumes the form of a desire to commemorate their own period of office by some kind of permanent local improvement. Another type is that which seeks "economy" at all costs as exhibited in places in which conditions opposed to public health or decency are suffered to continue year after year without any effort being made for their improvement. The Medical Department of the Local Government Board has lately published many of the reports of its inspectors as soon as they have been sent in, and we need not go beyond those of the current year in order to find abundant or even appalling evidence of the neglect of primary duties by some municipalities, even by those whose attention has again and again been officially called to their misdoings. Insufficient and polluted water, houses unfit for human habitation, accumulations of excrement, deficiencies of drainage, neglected vaccination, filthy cowsheds, systematic non-observance of by-laws, the lack of means for the isolation of infectious disease, and a high rate of infantile mortality, are the ordinary counts in the indictments brought by the inspectors against the localities upon which they have been required to report. The "sanitary state and administration" of a large number of districts in England have been officially described in terms which indicate not only the deliberate intention of those in authority to avoid the performance of duties imposed upon them by the legislature, but also an almost pathetic ignorance of the certain consequences of their actions. For it must be remembered that the reports of the inspectors are only called for in cases in which the attention of the Board has already been directed to the results of maladministration. The local rate of mortality, or the recurrence of epidemics, or the defective character of the reports received from local officials, has in most cases furnished the immediate and direct stimulus to the inquiry by which the facts have been brought to light.

Dr. JOHNSON once attributed to "pure ignorance" a mistake into which he had fallen, and it is by no means improbable that a similar excuse might constantly be urged in extenuation of the shortcomings of municipalities. FARADAY pointed out that the people who were ready to decide without knowledge concerning the causes of physical phenomena "might be really very acute and correct in things familiar to them," and it is manifest that a man may be an excellent butcher, or baker, or candlestick maker, a declared Liberal, or Unionist, or Socialist, or Labour man, and a pillar of his party in the district in which he lives, who is yet absolutely incapable of becoming a good member of a local authority. As regards matters appertaining to the local health and welfare, which are the chief, if not the sole, concerns of a municipality, he is often too ignorant to be competent and his local political ascendancy often renders him too conceited to learn. It is in respect of the qualifications which the ratepayers should seek from their representatives that the public, speaking generally, stand most in need of instruction, and this instruction the medical profession should be in a position to afford. The objections to affording it individually might in great degree be obviated by collective action, and local medical societies might often endeavour to instruct and to modify public opinion by means which might not at first be conducive to the prosperity of individual practitioners. There have been instances in which such societies have invited the public to meetings where questions of public interest were to be discussed; and such meetings should afford valuable means of imparting instruction in general principles with only the slightest reference to individuals. The ratepayers of a place like Dewsbury, who have had to pay £20,000 in one

year as the cost to them of a board of guardians hostile to vaccination and of district councils which failed to provide isolation hospitals, would not, it may be imagined, be wholly deaf to teaching which explained the causes of their burdens and the way in which to seek a diminution of them for the future. Whatever might be the opposition to truth in particular places, there can be little doubt that, if it were clearly placed before the eyes of the public, it would in the long run prevail; and the same influences which were effective in diffusing it, and in rendering perseverance in inactivity impossible, might be expected at the same time, to withdraw public support from municipal extravagance. We have no wish to urge upon medical men that they should become active local politicians; but we do strongly urge upon them that they should make their influence felt with regard to subjects on which they have special knowledge and on which, in the great majority of cases, their fellow citizens are woefully in need of guidance. The medical profession has a great opportunity of increasing its influence upon public opinion in matters which are clearly within its province; and no well-considered effort in this direction could fail to have the effect of rendering that influence more operative in many other ways.

Annotations.

"Ne quid nimis."

BOGUS INSPECTORS.

A YOUNG man, aged 26 years, who at the recent sessions at Newington pleaded guilty to thefts of jewellery of considerable value, had obtained admission to the houses in which he committed his robberies by representing himself to be a sanitary inspector. In the case which resulted in his arrest he called at about dinner-time and on hearing his story a servant maid admitted him. When, however, her mistress heard of the visit of the "sanitary inspector" presumably it struck her that the powers vested in the local authority could hardly warrant the arbitrary and causeless invasion of her house at such an hour and she asked to see the man who, finding that he was likely to be questioned, fled and was promptly captured. It was proved by the police that he had made robbery from dwelling-houses his speciality, and as umbrellas and overcoats in the halls of houses to which he could procure admission had at one time been the object of his depredations it seems probable that medical men have before now had reason to regret his visits. As a rule, however, in these his earlier days he had entered surreptitiously houses the front doors of which happened to be open. More recently, by representing himself to be a sanitary inspector and by relying upon a certain want of caution and reasoning power not unusual in the domestic maid-servant and sometimes to be found even in her better educated mistress, he had embarked upon more profitable adventures, and Londoners are to be congratulated that for 12 months he will be kept out of mischief. We live in an age of many improvements, in which sanitary authorities and other agencies unknown to our forefathers protect us in our own interest from dangers to which we were once indifferent. Public health Acts, Acts of Parliament regulating the sale of food and of drugs, factory Acts, Acts regulating the supply of water and of light, and other beneficial and useful statutes are responsible for the existence of officials whose titles are familiar to all, but the limitations of whose powers and the distinguishing symbols or insignia by which they themselves may be recognised, are more or less unknown to the ordinary citizen. There are also public bodies and private associations, such as those which endeavour to prevent cruelty to children and to animals, which furnish their "inspectors" and agents with uniforms or badges capable of being imitated. The result of these innovations and of the respect of the law-abiding citizen for the "inspector" or other official with an equally awe-inspiring title, is that from time to time designing persons are tempted to play a part which will open doors to them more certainly and with less immediate danger than the jemmy or the skeleton key, or will enable them to lay hands upon their victim's money without the physical insertion of a larcenous finger in his pocket. In such a case as that described the object is simply to gain access and, if fortune favours, to steal, and as domestic servants are not likely to distinguish readily between genuine and pretended documents purporting to endow their holders with authority it is simpler to warn them to admit no such official stranger to the house without orders to do so from their employers than to recommend them to discriminate. The employer, on the other hand, must exercise discretion and a little questioning will usually show conclusively whether the person claiming admission should be permitted to enter without further inquiry. When admitted he can always be accompanied by a servant, and as the operations likely to be suggested by a genuine or even by a bogus "inspector" must almost necessarily be confined to lavatories and other offices which do not usually contain valuables the precaution of accompanying the "inspector" will usually protect the householder in any event. Those who by some default of their own, as, for instance, traders who deal in adulterated goods, lay themselves open to another form of robbery—that of blackmail—have themselves to thank if they are victimised. To them we can only say that the honest have nothing to fear from the law, and even the dishonest can usually retaliate with considerable effect upon anyone who endeavours to extort hush-money. As we have suggested above, the laws which expose the unwary to the ingenuity of the sham official are in themselves enactments which have been, and are, of considerable benefit to the community and it is to be hoped that severe sentences will in all cases be inflicted upon the rascals who convert them into sources of loss and annoyance to honest citizens.

THE THIRTY-FIFTH ANNUAL REPORT OF THE LOCAL GOVERNMENT BOARD.

THE thirty-fifth annual report of the Local Government Board was issued this week and is signed by Mr. John Burns who was appointed President a few months before the official year ended in March last. We must reserve for a future number any extended treatment of the various departmental matters with which the report deals. We notice that certain changes in the staff are announced, of which the following are of interest to the medical profession. Dr. Alan B. Green, the assistant bacteriologist at the glycerinated lymph laboratory, was succeeded by Dr. Donald George Sutherland who, however, resigned during the year, the appointment being filled by the assistant bacteriologist, Mr. John Sherwood New. In connexion with the arrangements requisite to give effect to the Sale of Food and Drugs Act, 1899, a sub-department for the inspection of foods was established and was placed as a temporary arrangement under the direction of Dr. George Seaton Buchanan, one of the medical inspectors, who was appointed inspector of foods. Dr. J. Spencer Low has temporarily filled the vacancy caused by Dr. Buchanan's appointment. Not the least interesting section of

the report is that dealing with the Order of the Local Government Board issued in September last year establishing distress committees and a central body for London under the provisions of the Unemployed Workmen Act, 1905. In the report dealing with Poor-law administration reference is made to the circular forwarded in February last year to boards of guardians and others bringing to their notice an extract from the rules of the Central Midwives Board regulating admission to the roll of midwives under Section 2 of the Midwives Act, 1902. There are interesting reports from the Board's inspectors as to the condition of pauperism and the administration of relief in their districts. In the public health section of the report statistics of public vaccination are given. As regards the administration of the Sale of Food and Drugs Act, the returns show that of 3232 samples of drugs examined 292 were rejected, giving a percentage of 9 as compared with 11·3 in 1904. The proportion of samples of food reported to be adulterated was 8·2 per cent. which was the average percentage for the three years from 1902 to 1905 inclusive. Milk continues to show a rate of adulteration equal to 10 per cent. of the samples examined. Comment is made on the system of sampling which in many instances is obviously defective. In regard to the metropolitan water-supply, Dr. T. E. Thorpe, C.B., F.R.S., reports that it appears that the conditions of the Thames and Lea, from which by far the greater portion of the metropolitan water-supply is obtained, were last year fairly favourable to the operations of the Water Board, although at certain times the qualities of the supplies were adversely affected by floods. Other parts of the public health section of the report refer to imported plague, infectious diseases, and the housing of the working classes. The report of the medical officer, however, will appear as a supplement to the present volume.

THE DECLINE OF THE KITCHEN RANGE: A CAUSE OF INSANITARY DUSTBINS.

THE increasing use of gas for cooking purposes threatens to abolish one of the most important functions of the kitchen range—namely, that of a cremator of combustible garbage in the shape of potato-peelings, tea-leaves, bones, and so forth. The gas-stove is not likely to take the place of the kitchen range as a dust destructor and cremator, and this fact, in view of the substitution of the gas-stove for cooking purposes, may prove to be a serious menace to the family hygiene. The dustbin which is not fed also with salutary ashes, which serve to absorb and to cleanse offensive matters, will inevitably become an intensified nuisance, for its contents will consist of readily fermentable and decomposable material. There will be, so to speak, no dilution of putrescible organic matters with inoffensive ashes. As Mrs. Charles Marshall of cookery fame points out in a communication which has reached us, the careful housewife for the sake of economy, if not on sanitary grounds, instructed her servants to feed the kitchen fire with all pestilential rubbish, and the maids, who found it easier to empty their dust-pans into the kitchen fire than to carry the dust to the dustbins, followed out the general principle of destroying the germ-laden dust. If the question of burning the rubbish is brought before the dweller in flats, in which gas stoves are so largely used for cooking purposes, the invariable answer is that the rubbish is taken away by the caretaker every morning. But there must be an appalling accumulation of rubbish in the general receptacle which sooner or later must become offensive. The tenants of the flat are thus at the mercy of the dust collector. The dustbin should never be the receptacle for moist decomposable substances such as peelings and tea-leaves which rot and give off offensive and unwholesome smells. Mrs. Marshall suggests that in a house where there is a copper-hole the refuse might be burnt each afternoon and at the same time hot water would be obtained which could be used for "washing up" purposes. Otherwise the householder should go back to the kitchen fire for the sake of cremating organic waste and protecting the atmosphere of his home from the evils arising from an accumulation of readily decomposable household rubbish. The question is, we think, a very important one in connexion with the preservation of the hygiene of the household.

A FORGOTTEN MEDICAL WORTHY.

WHEN Christopher Columbus made his second voyage to America in the year 1493 he was accompanied by Dr. Diego Alvarez Chanca of Seville, a distinguished practitioner who held the position of physician in ordinary to the King and Queen of Castile and Aragon. He was specially appointed by the Spanish monarch to accompany the expedition, which numbered 1500 persons, among them various distinguished and aristocratic Spaniards. In the *Journal of the American Medical Association* of Sept. 29th Dr. A. M. Fernandez de Ybarra of New York city contributes an interesting article on this expedition and the part played in it by Dr. Chanca. He gives some interesting extracts from a letter written by Dr. Chanca to the municipal authorities of Seville, describing the voyage and giving observations on the flora, fauna, ethnology, and anthropology of the parts visited by him. Columbus's first expedition consisted only of three small caravels, carrying in all 120 persons; the second was much larger, consisting of three great galleons or carracks and 14 caravels of different sizes and was intended to effect a permanent settlement in the land discovered on the first voyage in the previous year. A very comprehensive equipment, including 20 horses for the lancers accompanying the expedition, was carried on board these vessels. Dr. Chanca's medical skill was in frequent request, not only for Columbus himself, who suffered from typhus fever on one occasion and from malarial fever on another, but also for many of the Spanish hidalgos who accompanied him. The letter from which Dr. de Ybarra quotes was written at the port of Isabella during the last days of January, 1494; it left that port on Feb. 2nd in charge of Don Antonio de Torres whom Columbus sent back with 12 vessels to Spain, arriving on April 8th, 1494. Dr. Chanca describes the departure from Cadiz on Sept. 25th, 1493, and the arrival at Grand Canary about six days later, and the first sighting of land at dawn on Nov. 3rd. He states that the voyage would have been several days shorter if the *Capitana*, a galleon of 400 tons carrying the admiral's flag, had been as seaworthy as the other boats. The pilots estimated the total voyage at 1100 leagues (equivalent to about 2829 English miles). The joy among the people at sight of land was great, for Dr. Chanca describes them as wearied of bad living and of working the water out of the leaky ships. The extracts given by Dr. de Ybarra from Dr. Chanca's letter further show him to have been a most accurate and keen observer. He describes the islands of Hispaniola or Santo Domingo and the formation of the settlement of Isabella, about the site of which his professional advice was consulted, and mentions the islands of Gaudeloupe, Dominica, and Martinique. He further gives his reasons for thinking that other islands existed some 40 leagues beyond, which proved to be correct, for Trinidad was subsequently discovered about that distance away. He describes the habits and customs of the fierce and cannibalistic Caribbee Indians and refers to their habits as beastly. The fauna and flora he describes most carefully. He refers to the wax palm, cotton trees, nutmeg, ginger, and aloes as growing in these islands, and

also to the general luxuriance of the vegetation and the rapidity of its growth. He states that none of the natives of the islands visited possessed any iron but that they made implements of stone, many of them handsome and well finished. The discovery of gold in various places and the despatch of parties to explore and to search for mines he also relates and explains that on their return the ships would be able to carry back such a quantity of gold as to fill with amazement all who heard of it. After his return to Spain Dr. Chanca published in 1506 a treatise on the treatment of pleurisy and a Latin commentary on a book by Dr. Arnaldo de Villanova entitled "De Conservanda Juventute et Retardanda Senectute." In a footnote to Dr. de Ybarra's paper Dr. Carl H. von Klein of Chicago quotes from a letter written by Columbus to the King in reference to Dr. Chanca, in which he writes of the "continual labour that Dr. Chanca has undergone from the prodigious number of sick and the scarcity of provisions, and that in spite of all this he exhibits the greatest zeal and kindness in everything that relates to his profession." Columbus goes on to point out the sacrifices made as regards income and personal comforts by Dr. Chanca and to explain that he has fixed his salary at 40,000 maravedis per annum, exclusive of his maintenance, and to ask the Royal sanction to this expenditure. Dr. de Ybarra is to be congratulated on the interesting paper which he has produced on one who appears to have been not only a capable practitioner and naturalist but a really great man. It forms an interesting contribution to the medical history of America.

ANCIENT MEDICAL MSS. FROM SYRIA.

Professor Jalabert of the University of St. Joseph at Beyrouth, in preparing a corpus of inscriptions of Roman times in Syria has come across several referring to medical men, though considering the teeming population of that country in the early centuries of our era and the numerous inscriptions of all kinds discovered therein the record of physicians is singularly poor. He gives one from Gebal, the ancient Byblos, a city famous in the time of the Egyptian medical papyri for its knowledge of the healing art, as were Berytos and Antioch in Roman times, and seven others from various other sites. Some of these have been published by Herr Rudolfus Pohl last year in his "De Græcorum Medicis Publicis," who there prints a list of all ἀρχιατροί and proves that this title was of Syrian origin. In the same volume of "Mélanges de la Faculté Orientale" of the "Université Saint Joseph, Beyrouth," Professor Jalabert gives a list of monuments relating to the worship of "Æsculapius" found in Syria, giving also reproductions of photographs of several bas-reliefs representing the deity. It is strange, considering the identification by the Greeks and Romans of Æsculapius with the Semitic god, Eshmoun, that hitherto but few monuments and inscriptions relating to him have been found in Syria. The texts at present number only five, the largest of which, found in 1905, associates him with the deity Salus, as is often the case elsewhere. Two of the sculptured figures of the god depict him as a Roman officer but the accompanying serpent emblem decides his identity. A third relief only just discovered also delineates him as a warrior. These monuments of what may be termed the military Æsculapius are all found east of the Jordan along the boundary of that part of the Roman Empire and were doubtless erected by soldiers residing there or frontier colonist veterans who had retired from the ranks. One similar monument, however, has been described by Mr. H. C. Butler from Central Syria. In Italy, and certainly at Rome, the majority of devotees erecting monuments or inscriptions to Æsculapius were soldiers or veterans. His title in some of these texts is "Æsculapius Castrorum," proving a special cult of the deity in the legionary camps, a worship not surprising to anyone who knows the terrible mortality from disease and battle which consumed the Roman armies. The auxiliary troops and mercenaries were purposely placed on frontiers far away from their native country, so that soldiers from hot climates were quartered in Britain and Northern Europe, whilst troops from these regions were, as in the case of Hadrian's Jewish war, transferred to the torrid shores of Syria, the object being to prevent desertion or any sympathy with the natives on the frontier with whom there might be hostilities. Further, the gradual extinction of the Roman peasantry by legionary service is well known.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

THE official lectures will be delivered at the Royal College of Physicians of London, Pall Mall East, on each of the following Tuesdays and Thursdays at 5 P.M. On Tuesday, Nov. th, Dr. S. J. Sharkey will deliver the Bradshaw lecture, the subject being Rectal Alimentation. On Thursday, Nov. 8th, and Tuesday, Nov. 13th, the Fitz-Patrick lectures will be delivered by Dr. Norman Moore, the subject being the History of the Study of Clinical Medicine in the British Islands. On Nov. 15th the Horace Dobell lecture will be delivered by Dr. F. W. Andrewes, the subject being the Evolution of the Streptococci.

THE HYPOCHLORITES AS DISINFECTANTS.

IT does not appear that the methods hitherto proposed for the standardisation of disinfectants have so far been reduced to that state of uniformity which is desirable before a line can be drawn which shall separate absolutely the worthless from the trustworthy. Tests to be of any value at all must obviously be based on practical and not exclusively theoretical considerations. In practice it is not the pure culture with which we are concerned; it is the pathological product—a typhoid or cholera stool or tuberculous sputum. The chemist would broadly class such products as organic matter and, at any rate, he knows that such matter is likely to interfere with the intensity of the antiseptic agent in a number of ways. It amounts to this, that the best disinfectant must not only be a powerful germicide but it must also be compatible, so far as possible, with the organic matters inseparable from the excreta of disease. For comparative purposes, of course, the observed effect of certain chemical agents on pure active cultures gives us valuable information. The experiment may record a high germicidal equivalent but the introduction of readily decomposed or attached organic matter into the experimental field may clearly upset the calculation. Such a consideration apart, however, it would be a great gain to sanitary science if a line of experimental investigation could be adopted by all those who are endeavouring to place disinfectants in their proper category according to their merits or demerits, so that at least the results would show some agreement. As it is, we find, to give one example, that a well-known authority on bacteriological matters states that, on the one hand, a certain solution of hypochlorite of soda of definite strength is sufficient to devitalise non-sporing microbes in sewage, or any similar fluid, in ten minutes, while another says of a similar fluid that all hypochlorites are unstable and in presence of organic matter untrustworthy disinfectants. The same inconsistent statements appear in regard to the same chemical agent in a more striking way in the modern method of expressing the germicidal value of disinfectants in terms of the so-called carbolic acid equivalent. According to one investigator the carbolic acid equivalent of a given fluid which contains as its active constituent hypochlorite of soda is practically *nil* or not

more than 0·2, while another says it is 20. The enormous difference between these figures is of some importance in sanitary administration and the discrepancy, with whomsoever it lies, should be cleared up. On another page in our present issue we publish an interesting paper on the question of the disinfectant properties of the hypochlorites and in particular of the fluid obtained by the electrolysis of a salt solution. The electrolysed fluid obtained in the Hermite process and later the fluid produced at the Hermite installation in Poplar have from time to time been the subject of experiment by our own Commissioners who have reported to us that this fluid as it is now prepared is stable for all practical purposes, and, further, that samples of broth which had received comparatively small quantities of electrolysed saline solutions even after several weeks contained a sufficient amount of available chlorine to be titrated in the form of iodine with arsenious acid or thiosulphate of soda. We have recently confirmed these results, mixing with the fluid milk in one case and urine in the other. The writers of the paper referred to, however, report that a mixture of equal volumes of the electrolysed fluid and human urine when left in contact for an hour gave no reaction with sensitive potassic iodide starch paper. This is a little difficult to understand, since after several hours the mixtures which we have prepared have invariably exhibited a very powerful chlorous odour. Whether or not, therefore, the germicidal action of an electrolysed solution of hypochlorites is ultimately effected through the union of nascent oxygen with the protoplasm of the germ, as suggested by the writers, the fact remains that for a long time afterwards the mixed fluid gives off a very pungent chlorous odour and, further, sets free iodine from potassic iodide. As to the stability of the electrolysed fluid the writers found that a solution showing originally 0·355 per cent. of available chlorine showed at the end of two months a strength of 0·319. The loss of chlorine, therefore, was only 0·036 gramme in two months and with somewhat stronger solutions they would probably have found the slight loss of strength even less than this. We believe with DR. KLEIN, in spite of statements to the contrary, that the hypochlorites are powerful disinfectant agents even when employed in the presence of sewage or other organic matter. Moreover, they are true deodorants, which cannot be said, of course, of those antiseptic preparations the basis of which is a coal-tar derivative. The interests of sanitary science are not best served by ignoring the claims of every disinfectant preparation but one.

THE IDLE THAMES STEAMBOATS: A SUGGESTION.

IT is in the winter that the atmosphere of London is prone to be most impure and it is in the winter that the London County Council's steamboats are idle. This idleness represents a considerable loss to the ratepayers and the machinery and gear of the boats do not improve by being kept inactive. The wear and tear of active service would keep them in better working order and the bearings, cranks, and shafts would probably deteriorate less if they were kept in motion. It seems a pity that so much motive power should be floating useless on the river for so many months of the year. Why cannot this force during the winter be employed in another direction? The steamboats are not wanted in the winter but the engines might be used for some other and profitable purpose. It would surely not be a difficult matter, for instance, to take off the paddle-wheels and to engage the shaft on a dynamo for electric-lighting purposes at various points on the river. The steamers might also be used for purifying the atmosphere and turned into ozonisers placed at various points on the river. Their combined action might even be directed to the dissipation of fog. Much of the fog in London owes its birth to the river, and if the rise of vapours and mists could be stopped then the great annual London evil might to some extent be mitigated in this way. It is known that powerful electric discharges cause the minute particles of mist to join together, forming drops which, falling to earth, clear the air. Possibly the whole fleet could supply enough power for the lighting of the Embankment or for part at any rate of the new electric tramway which is in course of construction there. The engines of the steamers might even be employed for charging accumulators to supply the motive power for electric cabs at a moderate charge. Machinery not in motion is an anachronism and a curious commentary on a body of municipal legislators who are proud to be called progressive.

FRUIT AND ITS USES AS FOOD.

IN a bulletin published by the Department of Agriculture of the United States Mr. C. F. LANGWORTHY, Ph.D., of the Office of Experiment Stations describes the dietary value of fruit in a comprehensive way. With a view to learn something more definite regarding the possibilities of fruits as sources of nutrients, the relative cost of nutrients supplied by fruits and other foods, and the digestibility of a fruit diet as compared with an ordinary mixed diet, extended investigations were undertaken. The diet consisted of definite quantities of apples, bananas, oranges, dates, honey, olive oil, almonds, pine nuts, and walnuts. From these studies it was found that the diet of the women and children furnished from 32 to 43 grammes of proteid and from 1190 to 1430 calories of energy per day, the cost ranging from 15·7 cents to 27·5 cents (from about 7½*d.* to nearly 1*s.* 2*d.*). Considering these studies on the basis of the amount eaten per man per day the results obtained with the women and children when calculated on this basis showed a range of from 47 to 80 grammes of proteid and from 1850 to 2805 calories of energy, the cost of the daily food ranging from 21 to 55 cents (from about 10½*d.* to about 2*s.* 3½*d.*) per head per day. In the studies with the young and the old men the proteid supplied by the daily diet ranged from 40 to 85 grammes and the energy from 1712 to 3305 calories, the average being 62 grammes of proteid and 2493 calories, the cost ranging from 18 to 47 cents (from 9*d.* to nearly 2*s.*) per person per day. These amounts are considerably less than have been found on an average with families living in many different regions of the United States, but on the other hand in many of the dietary studies made under the auspices of the Office of Experiment Stations it has been found that persons living on a mixed diet have received amounts directly comparable with those supplied by a fruit diet. These experiments made in California by Professor JAFFA are far too limited to draw any hard-and-fast conclusions in regard to a diet solely of fruit, but his investigations seem to show that fruits and nuts should not be regarded simply as food accessories but should be considered a fairly economical source of nutritive material. Studies as to digestibility of fruit indicated that as a class ripe fruits are thoroughly digested. The conclusions arrived at as the result of experiments carried out by the United States Office of Experiment Stations and other investigators are that fruits are wholesome, palatable, and attractive additions to our diet and may be readily made to furnish a considerable part of the nutrients and energy required in the daily fare. It may be pointed out, however, that in order to receive the nutritive equivalent of a mixed diet containing amongst other things meat, a very large and inconvenient quantity of fruit would have to be consumed. Fruit alone contains a relatively small proportion of nutrients. Intelligently used, fruits are

a valuable part of a well-balanced diet and may be advantageously eaten in even larger quantities than at present. In some circumstances vegetarianism may be of value but the ordinary healthy individual is best suited by a mixed diet.

ANEURYSM OF THE AORTA WITH SLOW EXTRAVASATION OF BLOOD INTO THE PERICARDIUM.

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more than 0·2, while another says it is 20. The enormous difference between these figures is of some importance in sanitary administration and the discrepancy, with whomsoever it lies, should be cleared up. On another page in our present issue we publish an interesting paper on the question of the disinfectant properties of the hypochlorites and in particular of the fluid obtained by the electrolysis of a salt solution. The electrolysed fluid obtained in the Hermite process and later the fluid produced at the Hermite installation in Poplar have from time to time been the subject of experiment by our own Commissioners who have reported to us that this fluid as it is now prepared is stable for all practical purposes, and, further, that samples of broth which had received comparatively small quantities of electrolysed saline solutions even after several weeks contained a sufficient amount of available chlorine to be titrated in the form of iodine with arsenious acid or thiosulphate of soda. We have recently confirmed these results, mixing with the fluid milk in one case and urine in the other. The writers of the paper referred to, however, report that a mixture of equal volumes of the electrolysed fluid and human urine when left in contact for an hour gave no reaction with sensitive potassic iodide starch paper. This is a little difficult to understand, since after several hours the mixtures which we have prepared have invariably exhibited a very powerful chlorous odour. Whether or not, therefore, the germicidal action of an electrolysed solution of hypochlorites is ultimately effected through the union of nascent oxygen with the protoplasm of the germ, as suggested by the writers, the fact remains that for a long time afterwards the mixed fluid gives off a very pungent chlorous odour and, further, sets free iodine from potassic iodide. As to the stability of the electrolysed fluid the writers found that a solution showing originally 0·355 per cent. of available chlorine showed at the end of two months a strength of 0·319. The loss of chlorine, therefore, was only 0·036 gramme in two months and with somewhat stronger solutions they would probably have found the slight loss of strength even less than this. We believe with DR. KLEIN, in spite of statements to the contrary, that the hypochlorites are powerful disinfectant agents even when employed in the presence of sewage or other organic matter. Moreover, they are true deodorants, which cannot be said, of course, of those antiseptic preparations the basis of which is a coal-tar derivative. The interests of sanitary science are not best served by ignoring the claims of every disinfectant preparation but one.

THE IDLE THAMES STEAMBOATS: A SUGGESTION.

IT is in the winter that the atmosphere of London is prone to be most impure and it is in the winter that the London County Council's steamboats are idle. This idleness represents a considerable loss to the ratepayers and the machinery and gear of the boats do not improve by being kept inactive. The wear and tear of active service would keep them in better working order and the bearings, cranks, and shafts would probably deteriorate less if they were kept in motion. It seems a pity that so much motive power should be floating useless on the river for so many months of the year. Why cannot this force during the winter be employed in another direction? The steamboats are not wanted in the winter but the engines might be used for some other and profitable purpose. It would surely not be a difficult matter, for instance, to take off the paddle-wheels and to engage the shaft on a dynamo for electric-lighting purposes at various points on the river. The steamers might also be used for purifying the atmosphere and turned into ozonisers placed at various points on the river. Their combined action might even be directed to the dissipation of fog. Much of the fog in London owes its birth to the river, and if the rise of vapours and mists could be stopped then the great annual London evil might to some extent be mitigated in this way. It is known that powerful electric discharges cause the minute particles of mist to join together, forming drops which, falling to earth, clear the air. Possibly the whole fleet could supply enough power for the lighting of the Embankment or for part at any rate of the new electric tramway which is in course of construction there. The engines of the steamers might even be employed for charging accumulators to supply the motive power for electric cabs at a moderate charge. Machinery not in motion is an anachronism and a curious commentary on a body of municipal legislators who are proud to be called progressive.

FRUIT AND ITS USES AS FOOD.

IN a bulletin published by the Department of Agriculture of the United States Mr. C. F. LANGWORTHY, Ph.D., of the Office of Experiment Stations describes the dietary value of fruit in a comprehensive way. With a view to learn something more definite regarding the possibilities of fruits as sources of nutrients, the relative cost of nutrients supplied by fruits and other foods, and the digestibility of a fruit diet as compared with an ordinary mixed diet, extended investigations were undertaken. The diet consisted of definite quantities of apples, bananas, oranges, dates, honey, olive oil, almonds, pine nuts, and walnuts. From these studies it was found that the diet of the women and children furnished from 32 to 43 grammes of proteid and from 1190 to 1430 calories of energy per day, the cost ranging from 15·7 cents to 27·5 cents (from about 7½*d.* to nearly 1*s.* 2*d.*). Considering these studies on the basis of the amount eaten per man per day the results obtained with the women and children when calculated on this basis showed a range of from 47 to 80 grammes of proteid and from 1850 to 2805 calories of energy, the cost of the daily food ranging from 21 to 55 cents (from about 10½*d.* to about 2*s.* 3½*d.*) per head per day. In the studies with the young and the old men the proteid supplied by the daily diet ranged from 40 to 85 grammes and the energy from 1712 to 3305 calories, the average being 62 grammes of proteid and 2493 calories, the cost ranging from 18 to 47 cents (from 9*d.* to nearly 2*s.*) per person per day. These amounts are considerably less than have been found on an average with families living in many different regions of the United States, but on the other hand in many of the dietary studies made under the auspices of the Office of Experiment Stations it has been found that persons living on a mixed diet have received amounts directly comparable with those supplied by a fruit diet. These experiments made in California by Professor JAFFA are far too limited to draw any hard-and-fast conclusions in regard to a diet solely of fruit, but his investigations seem to show that fruits and nuts should not be regarded simply as food accessories but should be considered a fairly economical source of nutritive material. Studies as to digestibility of fruit indicated that as a class ripe fruits are thoroughly digested. The conclusions arrived at as the result of experiments carried out by the United States Office of Experiment Stations and other investigators are that fruits are wholesome, palatable, and attractive additions to our diet and may be readily made to furnish a considerable part of the nutrients and energy required in the daily fare. It may be pointed out, however, that in order to receive the nutritive equivalent of a mixed diet containing amongst other things meat, a very large and inconvenient quantity of fruit would have to be consumed. Fruit alone contains a relatively small proportion of nutrients. Intelligently used, fruits are

a valuable part of a well-balanced diet and may be advantageously eaten in even larger quantities than at present. In some circumstances vegetarianism may be of value but the ordinary healthy individual is best suited by a mixed diet.

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"abscess I have never seen." Professor W. Osler, in the article on Malaria in Professor Clifford Allbutt's "System of Medicine," and Sir Patrick Manson in "Tropical Diseases" (first edition) make no mention of the disease. During the past five years 73,991 cases of malarial fever, with 230 deaths, have passed under the review of Major Anderson in the convict hospitals at Port Blair, while 3446 cases of the same disease, with five deaths, were admitted during the same period to the police hospital, and 512 cases entered the Andamanese and free hospitals. Of these 77,949 patients only two were recognised during life to be suffering from abscess of the spleen. On examining the available post-mortem records of death from malaria Major Anderson found that in three instances only was splenic abscess present. A good account is given of the two cases in which an abscess in the spleen was correctly diagnosed during life. One of the patients recovered, whilst the other died. The patient who recovered was a Hindu male, 25 years of age, who was admitted into hospital for fever and enlarged spleen in April, 1901. A few days after admission marked tenderness, spontaneous pain, and slight localised bulging over part of the anterior border of the spleen, accompanied by fever of a low remittent type, led to the suspicion of abscess of the spleen. The diagnosis was confirmed by puncturing the organ with a small aspirating needle. An incision was then made through the abdominal wall over the most prominent part of the swelling and about one pint of reddish pus was evacuated. Free irrigation with sterilised water was made and on inserting a couple of fingers to discover the limits of the abscess cavity and to feel for possible neighbouring abscesses, an odourless slough of splenic tissue, 270 grains in weight, was removed. Two drainage-tubes were inserted and complete recovery resulted. A considerable number of authors who have made observations on abscess of the spleen attribute the disease to infarction of this organ. Major Anderson states that three of his five cases add support to this belief. It is considered that splenic abscesses are the result of pyogenic infection but the source from which the infection is derived is not at all evident.

THE SANITARY CONDITION OF DARTMOOR VILLAGES.

IN a report to the Local Government Board on the Tavistock rural district, lately issued, Dr. R. Deane Sweeting gives a disquieting account of the condition, from a health point of view, of many of the villages about Dartmoor which are dear to the tourist and the holiday maker. The occasion of his inquiry was an outbreak of diphtheria at Princetown, and the facts obtained in this instance and in regard to similar occurrences in other villages in the Tavistock rural district show a very lax state of affairs in dealing with infectious diseases. Where such cases are reported it appears that the inquiries made have often been perfunctory or that no notice has been taken, with the result that schools have not been closed at a time when closure would have been of special value, or, as in the case of the epidemic of diphtheria at Princetown, the prevalence of disease has been attributed to circumstances which more careful inquiry would have shown to have had nothing to do with the occurrence of the outbreak. Children suffering from diphtheria and scarlet fever are in all cases left at their homes during illness as there is no hospital provision. Practically speaking, no attempt is made by the sanitary authority to secure proper disinfection of rooms, clothing, or bedding. The inspector of nuisances leaves the matter of disinfection to the private practitioner or contents himself with providing the householder with a bottle of disinfectant. Dr. Sweeting indicates that more can hardly be expected of the present officer in this matter on account of age and physical infirmities. The work of the medical officer of health also receives considerable criticism in this report. Dr. Sweeting states that this officer, who has held the office for 15 years, "has an imperfect knowledge of the district," and "is almost entirely dependent on the inspector of nuisances for such knowledge as he has." A vigorous protest against Dr. Sweeting's observations was made by the medical officer of health at a recent meeting of the Tavistock rural district council, at which the question of re-appointment of the medical officer and the inspector was raised. As a result of the discussion a committee was appointed to consider the questions brought to notice by Dr. Sweeting's report. It is clear that the district council ought not to rest content with settling the question of its sanitary staff and adopting reasonably efficient methods to deal with reported cases of infectious disease. Dr. Sweeting's report shows that there is need for a change of policy and improved administration in various other sanitary matters. Houses in this district have been erected or rebuilt without due certification of their having been provided with an available supply of wholesome water. Certain of the villages and collections of dwellings have water supplies which are inadequate and in some cases the purity of the water is open to considerable suspicion. Attention is drawn in the report to various nuisances resulting from unsatisfactory methods of disposal of sewage and house refuse and to the need for supervision of the condition of the cowsheds and slaughter-houses of the district, many of which seem at present to be far from satisfactory.

SPINAL ANÆSTHESIA IN SURGERY.

CONSIDERABLE improvement has recently been made, both in England and on the continent, in the procedure for the induction of spinal anæsthesia which has come to be known as Bier's method, although so long ago as 1885 Corning injected a 2 per cent. solution of cocaine between the eleventh and twelfth dorsal vertebræ and succeeded in rendering the lower half of the body anæsthetic. One modification has been the substitution for cocaine of less toxic substances, such as stovaine and novocaine, and their combination with some form of suprarenal extract. In a succinct *résumé* of the technique in the *Neurologisches Centralblatt* of Oct. 1st Adler recommends Jacoby's plan of joining the highest points of the iliac crests by an imaginary line and passing the needle or trocar through the intervertebral space immediately above. This is bounded usually by the second and third lumbar spines. There can be no doubt that puncture exactly in the middle line is preferable, for by this means the operator is less likely to injure the roots of the cauda equina, and at the same time the risk of producing merely a hemianæsthesia will be minimised. Once the cerebro-spinal fluid is seen to be escaping in its ordinary clear state, one or other of the following solutions is injected into the cisterna terminalis *viâ* the trocar:—

Solution 1.		*Solution 2.*	
Stovaine	0·06 gramme	Novocaine	0·2 gramme
Adrenalin	0·00025 "	Sol. suprarenini boric (1 in 1000).	5 minims
Sodium chloride	0·0022 "	Sodium chloride ...	0·018 gramme

For operations on the perineum and lower limbs, four to six centigrammes of stovaine or one decigramme of novocaine is requisite; for the abdomen, six or eight centigrammes of stovaine or one and a half decigrammes of novocaine. The patient lies with his pelvis slightly elevated, and after about four minutes anæsthesia is established which persists for about an hour or one and a half hours. The earliest change is loss of the tendon reflexes, then the sense of pain goes from the legs and buttocks, then the sense of temperature and the muscular sense disappear, next the cutaneous reflexes, and, finally, the scrotal reflex. Cocaine apparently removes only the

sensibility to painful stimuli. The immediate effects of the injection are in the great majority of cases negligible. The patient often becomes indifferent to his surroundings, sleepy, and apathetic. Headache and vomiting are not infrequently met with at a later stage. Various writers have described a transient paresis of the fourth and sixth cranial nerves, seemingly due to a specific action of stovaine and novocaine. In two or three cases dyspnœa and even failure of respiration have been noted and sometimes persisting paræsthesiæ. On the other hand, it may be said that every week the number of successful "rachistovainisations" is increasing and their increase is a convincing proof of the practicability and value of the method. The relative well-being of the patient during the operation and the absence of shock cannot be gainsaid, while the importance of modified anæsthesia in cases of nephritis, cardiac disease, diabetes, arterio-sclerosis, pulmonary affections, and so on, is obvious. In all acute and chronic diseases of the spinal cord, in children under 14 years of age, and in the weak-minded the procedure is contra-indicated. Also it should be borne in mind that failure to produce anæsthesia by intraspinal injection occurs in a certain number of cases and that after-effects are at times very severe and persistent. These, from the nature of the method, cannot be provided against or alleviated. "Aseptic" meningitis, although rare, has in some instances occurred and the possibility of its supervention must be taken into account.

SOME MODES AND MEANS OF NUTRITION.

IN beginning the course of lectures on Physiology in the University of Manchester on Oct. 3rd Professor W. Stirling delivered a lecture on "Means and Modes of Nutrition," with special application to animals. Bernard pointed out the fundamental identity in the nutritive process in animals and plants and has shown the large part played by ferments in both vegetable and animal nutrition. When we trace the story, however, we find that Count Gleichen Russwurm in 1777 fed infusoria artifically with carmine, and saw that it was ingested; he had struck upon a fact which it required the genius of a Metchnikoff to apply. Corti observed that the infusorian Stylonichia when deprived of food became more transparent and less granular. Ehrenberg by repeating the carmine feeding experiments was led to his almost forgotten polygastric theory as applied to infusorians. Haeckel long afterwards when injecting an invertebrate found that the leucocytes of its blood took up into their bodies the black particles of the injection. Cohnheim utilised this fact in his classical experiments on inflammation. It was, however, the study of the daphnia, a water flea infested with the spores of Monospera, that led Metchnikoff to his famous theory of phagocytosis. It is not improbable, as Haeckel suggests, that the sensitive and travelling leucocytes of our invertebrate ancestors have powerfully coöperated for millions of years in the phylogenesis of the advancing animal organisation. These "eating cells" do exactly what amœba and its allies do—digest their food by the aid of intracellular ferments. The observations of Krukenberg, Fredericq, and Verworn, and the pupils of Metchnikoff, and in our own country those of Miss Greenwood, Dr. Griffiths, and others, have made us familiar with intracellular digestion as it occurs in protozoa and cœlenterates. Engelmann observed that blue litmus particles became red in the vacuoles of amœba and its allies. Subsequent observers used neutral red and other sensitive reagents for the same purpose. It is a relatively easy transition from intracellular to extracellular digestion. Both depend on the existence and activity of specific enzymes. The intracellular digestion of protozoa serves a double purpose: the nutrition of these organisms and the protection of them against infective parasites. This latter idea led to the theory of natural immunity due to cellular digestion. The problem of digestion is intimately related to that of chemotaxis, or more especially to that variety called by Stahl "trophotropism," both positive and negative. It would seem that ferments characterised by their specific action play the leading rôle both in intracellular and extracellular digestion. Early in the zoological scale nature introduces the barbed dart to impale and to paralyse the victim. Subtle poisons are used to kill or to paralyse the victim which is destined to form food for the offspring of certain insects. The poisonous substance is usually injected into the most vulnerable part of the nervous system, whereby the victim is apparently dead yet liveth, so that nature has found a means of keeping the "meat" fresh for the ravenous grub by a method in part comparable to the cold storage process; for the larvæ of certain insects the prey is kept fresh until such time as the grub is ready to use it.

A TELEGRAM from the Governor of the Mauritius received at the Colonial Office on Oct. 19th states that for the week ending Oct. 18th there were 26 cases of plague and 21 deaths from the disease. As regards Queensland the Department of Public Health in a bulletin dated Sept. 15th states that no case of plague has occurred in Brisbane since June 20th. With respect to Cairns the patients under treatment are progressing favourably. During the week ending Saturday, Sept. 15th, 2 cases of suspected illness were reported and are being kept under observation.

THE Committee for the Study of Special Diseases in the University of Cambridge announces that Mr. G. W. Nicholson, M.A., B.C., of Jesus College, Cambridge, and Guy's Hospital, London, has been appointed to the R. C. Brown Scholarship in Special Pathology.

LORD ROSEBERY ON THE INSANE AND THEIR COST.

Lord Rosebery's personality as a Scot is highly appreciated by his fellow countrymen. He has few equals in the art of happily portraying in appropriate and sympathetic phrase the multiform phases of our social and domestic life; and his speeches in this connexion are usually listened to with pleasure and acceptance on all hands. When, as Lord Lieutenant of Linlithgowshire, he formally opened, on Oct. 3rd, the village asylum at Bangour for the accommodation ultimately of 1000 patients at a cost of £300,000, it might well have been thought that the occasion was one to which he would do full justice. But, having been called upon to bless a work fraught with great possibilities for good, he did little more than damn it with a faint praise and then passed on to make gloomily pessimistic remarks upon matters which had little or no connexion with the day's proceedings. The climax of the situation was not reached until he in effect told his hearers that the "enormous expenditure" of money upon the insane was a blunder and of the nature of a stumbling-block, and that the outlay would be infinitely more useful if it went to civilise the negroes of Central Africa or even to improve the homes of the British artisan classes.

Lord Rosebery's remarks at the opening ceremony were brief and delightfully cryptic; and he certainly shadowed forth no inkling of the feast of reason that was in store for the company in what he referred to as his "post-prandial speech." We think they should be preserved and therefore give them in full:—

Ladies and Gentlemen,—By the command and on behalf of the Edinburgh Lunacy Board, I have the honour of declaring this asylum open. I shall not add any remarks at this time, because I think that a building devoted to the alleviation of the acutest form of human distress is best opened by the beautiful prayer to which we have just listened. But I will add, as a resident of Linlithgowshire, this thought—How strange it is that the rocky ridge from which emerged that sweet poet, ripe scholar, and adventurous Jacobite—Hamilton of

Bangour—who will be immortalised, if for nothing else, by his exquisite ballad of the "Braes of Yarrow," should now be crowned by an asylum devoted to the relief of intellectual disability. It exemplifies the line that "Great wits to madness often are allied," and I hope that the buildings we are opening to-day will be as fruitful in good and as beneficent in result as the most imaginative poet could ever hope for his works.

As the "sweet poet" played on the rocky ridge some two hundred years ago the appropriateness of the exemplification and of the alliance is not very clear, and few of us are in the happy position of being able to estimate the possible hopes of the "most imaginative poet" as to the goodness or beneficence of his works.

After luncheon, Lord Rosebery dealt with the lunacy problem from a variety of aspects and pictured it in anything but roseate hues. He quoted from the recent report of the English Commissioners in Lunacy figures showing the large increase in the number of the notified insane, but overlooked the reassuring statemen tmade by the Commissioners in the same report that this is an increase only in the number of those persons who are detained under care and "does not necessarily imply an increase in *insanity*." Again, while passing under review some possible remedies for insanity his lordship announced that he was one of those who think that "the perfect equilibrium of the faculties which is represented by the idea of sanity is a possession, not of the majority, but of a comparatively trifling minority, of the human race"; but what that had to do with the solemnly suggested remedies for insanity, or why, if any such contention is correct, the question of remedy should come up at all we quite fail to see; while the "laughter and applause" that followed the announcement must be taken as an indication that some of the "trifling minority" were present and that Scotsmen are not after all so devoid of a sense of humour as some ill-natured persons have represented them to be. But the essence and serious business of the speech were reserved for the financial aspect of the question—viz., the cost of asylums, and in order that no injustice should be done by curtailment of his expression of opinion we quote his remarks as given in the *Scotsman* of Oct. 4th, the day after the opening.

> What an anxiety [said his lordship] is this lunacy! What an expenditure on buildings and of money it represents! On Jan. 1st, 1904, we find that the capital invested in lunatic asylums in the United Kingdom amounted to no less than £24,500,000. The annual expenditure on the keeping of lunatics and so forth was £3 500,000 or nearly—and this is the vastbarren fact that you have to face—that this money is paid by the nation, not for those from whom it can have any hope in the future, or, generally speaking, in whom they can have any confidence as good citizens and subjects, but for those who represent sheer waste and sheer decay. It is for this that we are building these sepulchres of living humanity, these tombs of the intellectually dead. I see constantly details of how this money or that could be better spent. The Uganda Railway is a popular topic of comparison, and when my more inflammatory friends on the platform have a topic to which they can usefully point as a subject of the expenditure of money which could be better spent elsewhere, they usually take the Uganda Railway. (Laughter.) But a thousand Uganda Railways, even if they convey but a few passengers to bring civilisation into the heart of Africa, are infinitely more useful than this expenditure on the intellectually dead. (Hear, hear.) If we can check or diminish that expenditure we shall indeed be happy.

And again, addressing himself more especially to the municipal authorities:—

> There is one thought which pervades my mind in connexion with this and all other asylums. I have been through your homes of the intellectually sick to-day. I have seen these cheerful sitting-rooms, these cheerful bedrooms, these cheerful dining-rooms, laid out as daintily as they could be for the blood royal, and the one prevailing thought in my mind all that time and which will continue to be while this impression is fresh in my memory—Why do all this for the intellectually dead; how much better it would be if we could do it for the intellectually living. (Applause.) You are making sumptuous homes for the insane. Why, how many of the artisan classes would gladly change places with these lunatics. How few of the artisan classes can ever hope to have homes so sumptuous and so comfortable as those that you have made here.

What wonder if the *Scotsman* felt itself constrained to say that the oratory of the occasion had a "topsy-turvy air" and that the "speeches of Lord Rosebery were more distinguished by their flashes of wit and their gracefully turned phraseology than by sequence or consistency of ideas." It is quite intelligible and not unreasonable that Lord Rosebery, or indeed any ratepayer, should in general terms disapprove of, or criticise unfavourably, the expenditure of large sums of money upon the insane, and if he had thus limited his animadversions no objection could be taken to his offering his opinion for what it was worth, but when he went on to give reasons and to refer to the annual expenditure as a "vast barren fact" which must be faced, to the insane as the representatives of sheer waste and sheer decay, and to asylums as sepulchres of living humanity and tombs of the intellectually dead, he went beyond the pale of innocent and pardonable flights of oratory and conjured up a group of ideas which rendered his statement of the case both unjust and untrue. When, in addition to this, the idea of "cheerfulness" of surroundings for asylum inmates is to be discounted as costly and out of keeping, and when the reasonable and proper requirements of those who are detained under care as being mentally disordered and unsound, whether temporarily or permanently, are to be in any sense subordinated to pecuniary considerations such as those affecting the civilisation of the negro, we must enter our emphatic protest against notions so retrograde and so grotesque.

Did Lord Rosebery ever seriously think out the position that he here takes up; or can it be that when his mind, abounding with normal sympathies, led him to theorise about the insane in the abstract and in large bodies detached from their domestic surroundings, his views took on a morbid and unnatural colouring to which he felt it to be his duty to give expression? Who are these inmates of asylums? They are for the most part the relatives, friends, and neighbours of those artisans and workmen for whose improved accommodation and domestic comfort Lord Rosebery appeals as a set off against the "cheerful" kind of provision made for the insane in asylums. It must be borne in mind that the condition of the ordinary average home is often much tranquillised and improved by the removal of an insane member of the family to an asylum and that—if the subjects are to be mentioned side by side—any betterment, by municipal or other authorities, of such a home which would directly or indirectly involve a reduction in the reasonable comforts of the asylum inmate, is an idea which we believe would be repugnant to the feelings of the class of "worthy workmen" to whom Lord Rosebery makes reference.

Lord Rosebery assumed a grave responsibility when he described the inmates of asylums as being intellectually dead and as representing sheer waste and sheer decay, because nothing could be further from the truth. In this relation we cannot do better than refer our readers to an admirable letter from Dr. T. S. Clouston in the *Scotsman* of Oct. 5th. After referring to the dissatisfaction and even pain felt by many of his audience in regard to the notes which his lordship struck in his speech he goes on to say that—

> It is a well-recognised fact in medicine that the general environment of the sick man strongly tends, along with the nursing and medical treatment, towards his recovery. This is especially the case in regard to mental disease. His Lordship, no doubt unintentionally, missed the strongest point in favour of Bangour and such advanced institutions—viz., that it was intended not merely to care for those who are incurable but, above all things, to give the best chance of cure to those who are curable. As a matter of fact, about 40 per cent. of the patients sent to mental hospitals do recover and are restored to their work in life. I believe that if treatment were earlier applied the number who recover would be still greater.

In addition to the curable cases a large percentage of inmates who are unfit for discharge are quite capable of taking an interest in life and of helping in the work of the asylum fields, workshops, and wards.

Dr. Clouston concludes with the following remarks:—

> I wish Lord Rosebery, from his position as a statesman to whom everybody listens, had struck this note of hope and effort instead of the pessimistic note that he took. He would thus have given encouragement to every worker in mental disease and would have enlightened the public mind. In many a home and in many a heart he would thus have lighted a ray of hope instead of producing a feeling of despair.

Dr. George M. Robertson, the medical superintendent of the Stirling District Asylum, writing in the same issue of the *Scotsman*, bears testimony to the great advantages of the more thorough and more humane system of treating the insane in the present day. "All the necessities of modern asylums," he says, "cost money. The District Lunacy Boards of the country are all agreed upon this point, that it is better to incur the expenditure than to revert to the old and cheaper system."

Bailie Clark, chairman of the Edinburgh District Board, spoke up on behalf of that board and shirked none of their responsibilities in the face of what Lord Rosebery had said.

> Their duty [he said] was to provide a home for the insane poor, and he thought in Bangour that they had as unique an example of such an asylum as could be found in Great Britain, or even in Europe, alike in plan, equipment, and efficiency. That it had been built on what was called the "segregate" system was due to the recommendations of the late Sir John Sibbald to the Board of Lunacy, and he thought, considering its size and equipment, that they had provided the asylum at a most moderate cost. He believed that it would compare favourably in that respect with any other institution in the country.

Scotland has always been to the forefront in lunacy administration and in all that pertains to the advancement of our knowledge in the pathology and treatment of insanity. Bangour village is well equipped in every respect for carrying out its high and humane purpose and the chief feature in its scheme is the avoidance, so far as possible, of everything suggestive of restraint.

We congratulate the "City Fathers" of Edinburgh and the Commissioners in Lunacy on their work, and if it should occur to the minds of some people that the initial expenditure of its construction has been a trifle costly, even to excess, who will blame the lunacy authorities if they think the little additional comforts advisable for their patients? Nay, rather would we, with Dr. Clouston, have it "counted to them for righteousness." In this connexion the thought must be ever uppermost in our minds that just as it is the duty of a father and mother to do their utmost for the weaklings of their family so must the public accept and carry out its pecuniary responsibilities for the care of the insane to whom it stands *in loco parentis*.

THE ANNUAL REPORT OF THE MEDICAL INSPECTOR OF PRISONS FOR THE YEAR 1905-06.

THE annual report of the Commissioners of Prisons and Directors of Convict Prisons for the year ended March 31st, 1906, contains *inter alia* the report of the medical inspector with the usual statistical tables regarding the health of the prison population.

The total number of prisoners (including debtors and persons committed in default of sureties) received into the local prisons of England and Wales during the year was 217,326, being 2603 less than the figure for the previous year. The daily average population was 18,288—viz., 15,377 males and 2911 females. 8241 prisoners, being 3·8 per cent. of the total number received during the year, were treated in hospital and a further 17,426 were under continuous medical care out of hospital for periods of seven days and over. The total number of deaths in the local prisons during the year amounted to 112, of which 85 were due to natural causes, the balance being made up by 16 judicial executions, nine suicides, and two deaths ascribed to non-natural causes, one being due to accident and one resulting from poisoning by phosphorus taken with suicidal intent prior to imprisonment. Of the 85 deaths from natural causes, 69 were of males and 16 of females. Calculated per 1000 of prisoners received this gives a death-rate of 0·37, which is the lowest yet recorded. The most considerable individual cause of death was pulmonary tuberculosis, which accounted for 16 cases, this being rather below the number recorded last year but approximating pretty closely to the average figure for the preceding 16 years. In all but three of the cases the presence of the disease was recognised when the individuals were received into prison. During the year 89 prisoners were released on medical grounds, the bulk of them being women in an advanced stage of pregnancy. The humane practice of releasing women in this condition and so averting from the children the stigma of prison birth is highly to be commended. In this connexion it is pointed out by the medical superintendent of Holloway prison, as a singular and regrettable anomaly, that while advanced pregnancy is accounted by the Secretary of State a sufficient reason for the release of a convicted criminal it does not appear to be always regarded by magistrates as adequate ground for bailing an untried prisoner; in two instances of child-birth in the above-named prison last year the mothers were unconvicted defendants remanded from the police courts.

In the course of the year 35 cases of infectious disease were reported in the local prisons—viz., 21 cases of erysipelas, six of enteric fever, four of scarlet fever, three of diphtheria, and one of mumps. In 14 of the cases of erysipelas the disease appeared to have originated after reception into prison, and as six of these cases occurred in Wandsworth prison, special attention has been paid to the sanitation of that institution and steps are being taken to bring it up to date. Most of the other cases of infectious disease were proved to have been infected prior to their reception into prison. The very low death-rate in the local prisons and their relative freedom from infectious disease reflect great credit on the medical department, especially when it is borne in mind that the majority of these prisons date from a time when sanitary science was still in its infancy, and when, moreover, as Dr. H. Smalley aptly points out, it was apparently supposed that the moral reformation of the prisoner was assisted by stinting him of light and air.

The number of prisoners certified insane in the local prisons during the year amounted to 129, giving a rate of 0·59 per 1000 received. Of these prisoners, 73 were found to be mentally unsound on admission and 27 more exhibited symptoms of insanity within a month of reception. This fact may be taken to show that under existing conditions imprisonment has no detrimental effect on the mental health of the criminal population, and that such insanity as occurs during incarceration is mainly attributable to the morbid predisposition of the individuals affected. And this view, it may be noted, is also supported by the facts regarding suicide; thus, of the nine prisoners who committed suicide during the year, three were on remand, and of the others all but one killed themselves within a month of conviction. While these facts are very satisfactory as a proof that the system of penal discipline at present in force does not involve any risk of inducing insanity, they suggest, on the other hand, that the mental condition of accused persons ought to be investigated more carefully before they are brought to trial.

In addition to those certified insane, 354 prisoners were found to be so defective mentally as to be unfit for the ordinary prison discipline. Cases of this sort are treated under special rules which are described as working satisfactorily, but Dr. Smalley is careful to add that such prisoners cannot be properly dealt with in institutions intended for sane offenders and that in their own interest no less than in that of society some more rational way should be found for disposing of these criminal defectives.

With regard to the class of juvenile offenders whose treatment has latterly been the object of special attention it is mentioned that a scheme has been devised for recording systematic observations as to the physical and mental characteristics of all prisoners received between the ages of 16 and 21 years. This scheme has not yet been in operation long enough to warrant any positive conclusions from the data that have been ascertained, but so far as the indications can be made out they show that the adolescent criminals are, on an average, below the physical standard of the population at large, and that in a remarkably high percentage of them there is an alcoholic, epileptic, or insane taint in the stock. It is satisfactory to note that the medical officers of the several prisons where juvenile-adult offenders are treated under what is known as the Borstal system are able to report that the ample diet, the regular industrial training, the daily drill, and the other sound hygienic influences which are essential features of this regimen are found to produce a rapid and considerable improvement in the physical and mental development of these youths.

In the convict prisons the daily average population during the year was 3135, 2994 males and 141 females, and the total number of deaths during the year was 18, 16 males and two females. One death was due to accident and the remaining 17 to natural causes, thus giving a death-rate of 5·4 per 1000 of the daily population. 19 convicts were certified insane. There were no deaths from suicide.

MEDICINE AND THE LAW.

Advice Gratis Refused.

AN amusing dialogue recently took place at the North London police court between Mr. Fordham and an applicant who sought his advice. Medical practitioners are so frequently the victims of those who are well able to pay for their aid, but who endeavour to obtain it without doing so, that they will appreciate the motives which led the learned magistrate to adopt an unsympathetic attitude. The person who thought himself entitled to an opinion handed up a document addressed to himself with the suffix "Esquire." This caught Mr. Fordham's eye at once. "I think," he said, "that an esquire should pay for legal advice. I only sit here to give advice to the poor." This produced a protest that the applicant was not rich and Mr. Fordham read the document further, only to

discover that it related to the alleged sale of a phonograph costing 4 guineas. He cautiously inquired whether this was an investment with a view to earning money with what he justly described as an expensive toy, and on being answered in the negative he refused to go further into the matter, saying that the man who could afford such a luxury could afford half a guinea for a solicitor. Solicitors will no doubt be grateful to the magistrate and medical men will wish that the purchaser of the 4 guinea phonograph might find it as difficult to procure medical assistance gratis as he did to obtain an opinion upon his legal position.

Two Important Cases in the Criminal Courts.

Two trials are likely to take place in the near future involving points of considerable interest to readers of THE LANCET. In the one the editor of a newspaper has been committed to take his trial at the Central Criminal Court in respect of a charge of indecent libel founded upon the advertisements appearing in his paper, the allegation being not that these were in themselves of an indecent character but that they related to matter of an indecent nature and did so in such terms as to render the editor responsible. In the other case referred to, a coroner's jury has found a verdict amounting to one of manslaughter against a parent whose child was stated to have died without medical aid, owing to the parent professing what is known as "Christian Science." This case also should in due course be tried at the Old Bailey.

ELECTION OF DIRECT REPRESENTATIVES UPON THE GENERAL MEDICAL COUNCIL.

WE have received the following communications with a request for their publication. The "return" given below is that foreshadowed in the circular addressed to the Chairmen of Divisions of the British Medical Association in England and Wales, which was published in THE LANCET of Sept. 8th, p. 670.

GENERAL MEDICAL COUNCIL ELECTION.

To the Editors of THE LANCET.

1. Dr. L. S. MacManus.
2. Dr. Langley Browne.
3. Dr. H. A. Latimer.

In issuing the above return the scrutineers desire to point out that the candidature of Dr. Morrison was not before the electorate in full.

HUGH R. KER, HUGH WOODS, A. G. BATEMAN,
Scrutineers.

To the Registered Medical Practitioners of England and Wales.

LADIES AND GENTLEMEN,—In placing my services at the disposal of the profession in the ensuing election for Direct Representatives on the General Medical Council, I may be allowed to say that, in order to show that my efforts in the past have not been confined to a narrow groove, I have been for many years a member of the British Medical Association and since the Cheltenham meeting a member of its Central Ethical Committee and its Representative on the Contract Practice Subcommittee in 1905–06, that I have attended all the Representative meetings of the Association on behalf of the North Manchester Division; that I am a member of the Council of the Lancashire and Cheshire Branch; a vice-president and ex-president of the Incorporated Medical Practitioners' Association; and have been a member of the Council of the Medical Guild practically since its foundation some 14 years ago and took an active part in its initiation. All this has given me considerable insight and experience as to the difficulties and trials, as well as shortcomings of everyday practice, which might prove useful in the General Council of Education and Registration in London.

I have recently expressed my views in THE LANCET and other medical journals as to the necessity of lectures being given to senior students on ethics to supply the deficiency caused by abolishing the apprenticeship system and of raising the standard of preliminary education both in arts and science before registration, which I need not repeat now. I am also in favour of more stringent action on the part of the Council in any proved cases of touting for vaccination on the part of Poor-law medical officers or their agents, even in those employed by the guardians, and I would go so far as to consider whether proved cases of gross underselling should not be considered "infamous conduct in a professional respect," not only as an injustice to their fellow practitioners, but as lowering the dignity of the profession in the eyes of the public.

The craze for registration now that midwives have secured it is certain to be attempted not only for nurses but spectacle makers, herbalists, &c., and will require careful watching during the next five years, and the General Council will require keeping on the alert, not only for the protection of the public, but if it were possible that of the profession as well, inasmuch as the President has stated that the Council's resources are not yet exhausted. Abolishing unqualified assistants not only benefited the public but the profession. It has always been my endeavour, in season and out of season, to secure as far as possible the union and the interests of the profession and especially by promoting new as well as old combinations of various kinds.

My personal experience of provident dispensaries and another large provident association, when on the staff of which for a few years I fought for the honour and dignity of the profession in the face of strong opponents, and for many years since leaving them, for a wage limit, is well known in my immediate neighbourhood. All this practical experience in addition to that gained as a general practitioner for upwards of a quarter of a century, would surely be of use in a council composed mostly of professors and consultants who know nothing of these matters personally, and would be of assistance in cross examination of delinquents when brought before it.

If it is possible in a new Medical Act to protect the public from the barefaced assumption of medical titles, especially by companies, and from other means of deceiving it, I need not say that it will have my hearty support. The experience gained during the three years I have sat on the Central Ethical Committee of the British Medical Association, not one meeting of which have I been absent from, ought to be of some service to me if elected to the General Medical Council. The reckless distribution of medical services without any regard to wage limit to the injury of respectable qualified practitioners should surely be adjudged "infamous conduct in a professional respect" as in any other.

Believe me, Ladies and Gentlemen, yours faithfully,
G. H. BROADBENT, M.R.C.S. Eng., L.R.C.P. Irel., and L.M.

8, Ardwick-green, Manchester, October, 1906.

To the Editors of THE LANCET.

SIRS,—It was with considerable pleasure that I read Mr. M. S. Harford's letter in your issue of Oct. 20th *re* Dr. MacManus's candidature at the forthcoming election as a Direct Representative on the General Medical Council. Mr. Harford draws attention to the injustice of the Battersea Provident Dispensary towards medical men practising in the district, but I think his remarks are mild. He draws attention to the fact that there are members who pay £35 per annum rent exclusive of taxes, and in this I am able to corroborate what he says. I should like to add further that this so-called charity receives some £125 or more per annum from the King's Hospital Fund. Do the people who subscribe to this Fund or those who are answerable for its proper distribution know that their money helps pretty considerably many members of the staff of this dispensary to drive in their carriages and motor-cars? No; I think not. I should like also to ask if the medical men belonging to this huge "charity" are aware of the touting that goes on to get members. I will give an illustration as to how it is done.

A collector goes to a house, in which two or three families may live, to collect a subscription from Mrs. A. Mrs. B, who lives upstairs, is standing at the door at the time the collecter calls. When he has received Mrs. A's subscription he turns to Mrs. B and asks her if she is a member. When she says "No," the collector in a suave way points out the benefit of belonging to the dispensary, and she, yielding to his persuasive manner, becomes a member, and I or one of my brother medicals, who is not a member of the dispensary staff, lose another patient. I speak from personal experience, although I have only been in the neighbourhood four months. I should like to ask Dr. MacManus if he is in favour

of this injustice to his medical brethren who are not fortunate enough to be reaping the plums from this enormous "charity," which is so well supported by handsome subscriptions from firms in the neighbourhood and the King's Hospital Fund. If so, I shall, for one, consider him anything but a fit representative on the General Medical Council. Trusting you will find space for this,

I remain, Sirs, yours faithfully,

H. NUNAN COLLIER.

Lavender-gardens, Clapham Common, S.W., Oct. 23rd, 1906.

To the Editors of THE LANCET.

SIRS,—I do not quite follow Mr. Harford's letter. The Battersea Provident Dispensary is one of the oldest in England, is conducted on absolutely correct lines, and has before now been commended in your journal. There is a strict wage limit. The medical staff form a majority of the committee and all money received, after paying expenses, is divided among them. The patients are at liberty to select their own medical man and, if popular, he naturally would have the largest number. I admit freely that all medical men of repute who have been practising in the neighbourhood for at least a year ought to be eligible for appointment, the time limit being intended to keep off medical practice jobbers who might try to make it an asset when selling, but my conscience is perfectly clear, for some time ago, when Dr. J. M. Dunbar was president of the South-West London Medical Society, I caused a meeting to be summoned at which I strongly advocated its being thrown open on the above lines and I have consistently followed that course ever since.

Yours faithfully,

LEONARD STRONG MACMANUS.

Spencer-park, Wandsworth Common, S.W., Oct. 23rd, 1906.

VACCINATION AND ANTIVACCINATIONISTS.

WE have received the following letter with a request for publication:—

To the Editors of THE LANCET.

SIRS,—The communications of your Manchester correspondent are always interesting reading, but at times, as in your issue of Sept. 29th, I think it is marred by referring to those who differ from him in opinion as fools, even though he adopts a circumlocutory method of saying so. Much can be said in defence of the anti-compulsory vaccinator. The history of vaccination records a considerable change of opinion from the time of Edward Jenner's statement that thereby absolute immunity from small-pox was secured to to-day, when members of the profession would hesitate, if not decline, to give a financial indemnity in case of an attack of small-pox within three or six months after "successful" vaccination: there is also the fact that the majority of cases of small-pox are vaccinated and re-vaccinated persons; this makes a dogmatic statement on this subject suggestive that the assertor has but a slight knowledge of the historical and statistical aspects of this question. Therefore I think that on this subject an opponent can reasonably expect a more courteous reference than that used by your Manchester correspondent, and especially so from a member of a profession that is credited with possessing self-control and courtesy in more than ordinary degree.—I am, Sirs, yours faithfully,

Whalley Range, Manchester, Oct. 1st, 1906. J. E. STOREY.

We submitted Mr. Storey's letter to our Manchester correspondent who replies as follows:—

To the Editors of THE LANCET.

SIRS,—I regret that the susceptibilities of Mr. Storey, and perhaps those of others sharing his views, were wounded by some remarks of mine in your issue of Sept. 29th, and hasten to acknowledge the courteous tone of his letter. Perhaps the language habitually used by many of the anti-vaccinationists had obscured the fact that in addition to being antivaccinationists they might also suffer from the delicacy of the hyper-sensitive. "Absolute immunity" was not claimed by me as the result of vaccination, which may be efficient or non-efficient according to conditions. Its apparent failures are far too numerous, but experience leads me to the belief that in most cases they are due to the disregard of the conditions necessary to success—as a matter of fact, to vaccination having been scamped. Mothers have objected to their babies being "punished" and medical men have naturally been reluctant to offend or to distress their patients. Moreover, the long immunity from serious general outbreaks of small-pox—so long that many of the present-day practitioners have never, or hardly ever, seen a case—has rendered some of them almost sceptical as to the need for such strong measures against a foe so long invisible. It might be worth while for Mr. Storey to examine the facts bearing on this matter provided by the German Army. As to compulsion, it is late in the day to object; notwithstanding what we consider our liberty we are surrounded by it, it is the air we breathe from the cradle to the grave, and there is no getting away from it. The antivaccination cult is one of sentiment, not of science, and its devotees appear to be forgetful or selfishly regardless of the danger to others involved in its pursuit.

I am, Sirs, yours faithfully,

Oct. 4th, 1906. YOUR MANCHESTER CORRESPONDENT.

We, too, are sorry that Mr. Storey feels that the comments of our Manchester correspondent were, in effect, a reflection upon himself. But we think that even Mr. Storey would agree, were he often present when certificates of conscientious exemption are being applied for, that "the ignorance and in many cases the sheer and absolute fanaticism displayed are somewhat depressing" to those who had hoped that the education of the poorer classes would by this time have led them to appreciate the teachings of science and the advances of protective inoculation generally. We do not think that our correspondent can be reasonably accused of having uttered any "dogmatic statement" in his observations of Sept. 29th and we are quite satisfied that he would agree with Mr. Storey that the position as regards the duration of protection has been very materially modified since Jenner's day. Indeed, we expect that one of the signs of the ignorance which our correspondent deplores is the inability of the least educated classes to accept the position and to get themselves revaccinated.

Looking Back.

FROM

THE LANCET, *SATURDAY*, Oct. 25th, 1828.

BIRMINGHAM SCHOOL OF SURGERY AND MEDICINE.[1]

DR. PEARSON'S INTRODUCTORY ADDRESS.

To the Editor of THE LANCET.

SIR,—I beg leave to hand to you (with the consent of the lecturer) the preliminary address delivered at the opening of the School of Medicine and Surgery in Birmingham this day, by Dr. R. Pearson. I am, Sir,

Your obedient Servant,

W. S. COX, Honorary Secretary.

24, Temple Row, Oct. 20, 1828.

Gentlemen,—Before I proceed to deliver the discourse which I have prepared for the present occasion, it will be expected that I should offer a few remarks relative to the origin and formation of this Institution. The most superficial observer must have perceived how much superior, in every respect, the present state of society is, to the state in

[1] A letter from Mr. William Sands Cox, F.R.S.L., senior surgeon of the Queen's Hospital, dean of the faculty, appeared in THE LANCET of July 29th, 1843, stating that "Her Majesty has been graciously pleased to grant a royal charter of incorporation to the School of Medicine and Surgery at Birmingham, with the privileges, immunities, rank, and title of the 'Queen's College, Birmingham.'" In THE LANCET of Oct. 8th, 1892, it was stated "October 1st was a memorable day in the history of Queen's College. The old associations of the past, the relations of the former buildings and the traditions of the medical school flourishing therein for many years have been uprooted and conveyed to 'fresh scenes and pastures new' at Mason College." In the same number of THE LANCET is published the inaugural address by Sir George Murray Humphry, M.D., F.R.C.S., F.R.S., celebrating the union of the two institutions. The Mason College (opened in 1880), it will be remembered was incorporated in the University of Birmingham early in 1900.

which it was twenty or thirty years ago. In what does this superiority consist? Is it not in the higher degree of mental improvement throughout every walk of life? But how has this pleasing change been effected? How have the various ranks in society emerged from comparative ignorance and uncivilization, into the present degree of culture and refinement? I answer, by the increased attention given to education, and by the establishment of various institutions calculated to diffuse knowledge and science, and to promote a taste for the arts. Look at what has been done in the metropolis in this way. What a number of literary and scientific institutions have sprung up there within a very few years, to which may now be added the two universities. From the metropolis let us turn our eyes to our large provincial towns—to Liverpool, Manchester, and Bristol, and we shall see that this spirit of the times, this ardour for mental improvement, has spread itself there also. We shall see that there also education, in all its branches, has been promoted—that there also the fine arts and the useful arts have been encouraged, and that in those towns, as well as in the capital of the empire, temples dedicated to science have been erected, and their portals thrown open to all who desire to enter. It would indeed have been a reproach if Birmingham had viewed with indifference all that has been going on in this way in rival towns; but Birmingham has, all along, been actuated by the very same spirit, omitting its excellent charitable institutions relating to education, I will instance, as suited to the present purpose, and as forming an era in the history of this town, its public libraries, its Philosophical Institution, its Mechanics' Institution, and its two institutions for the encouragement of the fine arts, in the support of which the liberality of many of the neighbouring noblemen and gentlemen has been so conspicuously displayed. But amidst all these improvements, there was yet wanting a school of medicine and surgery. This has, at length, been established after the example of those at Manchester, Liverpool, and Bristol, where the utility of such schools to young men brought up to the profession, has been amply proved during the space of several years. But it may be satisfactory to state the information on this subject, communicated by Mr. Watson, secretary of the Apothecaries' Company to the Committee on Anatomy, appointed by the House of Commons during the last session of Parliament. "On an average," (says Mr. Watson,) "during the last seven years, about 400 students have been examined annually by the Court of Examiners at Apothecaries' Hall; these have not all been educated in London, many have been in attendance at Edinburgh, some have been wholly educated at Manchester—and, of late, several English students have received their instructions from teachers in Dublin. *No young men come before the Court better qualified, in every respect, than those who have been entirely educated at Manchester*, where excellent lectures in every branch of medicine are given by competent teachers, and the Manchester infirmary affords, under the physicians belonging to it, most ample opportunities for the acquirement of practical knowledge." A stronger proof than this, of the utility of provincial medical schools, there cannot be. Now Birmingham being little, if at all inferior to the above-mentioned towns in wealth and population, it is obvious that the aggregate amount of young men brought up to the medical profession in this place and neighbourhood, must be nearly as great as in those places. The demand, therefore, for a school of medicine and surgery must be the same. Under this conviction, and in accordance with the spirit of the times, has been formed the present Institution, which has been honoured with the patronage of the following noblemen and gentlemen:—Marquis of Lansdowne, Earl of Plymouth, Earl Fitzwilliam, Earl Spencer, Earl of Bradford, Earl Howe, Earl of Mountnorris, Lord Viscount Hood, The Lord Bishop of the diocese, The Hon. Mr. Lyttleton, Sir G. Shepwith, Bart., Sir Robert Peel, Bart., Sir Eardley Wilmot, Bart., D. Stratford Dugdale, Esq., M.P., Frances Lawley, Esq., M.P.

We are proud, as indeed we ought to be, of the names of these distinguished characters; men not more respected for their rank and titles, than for their highly-cultivated minds, their benevolent principles, and their uniform attention to public good. By their courtesy in the present instance, they have evinced the estimation in which they hold the medical profession, and their desire to promote its interests; and the sanction which they have been pleased to confer on this school, cannot but give additional stimulus to our exertions.

Whilst speaking of our patrons, I must not omit to mention how much our institution has been befriended by the three senior physicians of this town, I mean Dr. Edward Johnstone, Dr. John Johnstone, and Dr. Male. With their accustomed liberality, these gentlemen have thrown open their libraries to us, and have allowed us the use of many valuable plates relative to the departments of anatomy and botany; and Dr. John Johnstone has permitted the lecturer on the practice of physic, in addition to his own, to avail himself of his privileges with respect to the admission of pupils at the General Hospital, an arrangement which cannot but be advantageous to the school.[2]

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8444 births and 4419 deaths were registered during the week ending Oct. 20th. The annual rate of mortality in these towns, which had declined in the six preceding weeks from 22·3 to 15·5 per 1000, further fell last week to 14·6 and was lower than in any week since the middle of August. During the first three weeks of the current quarter the death-rate in these towns averaged 15·7 per 1000; the rate during the same period in London did not exceed 14·5. The lowest death-rates in the 76 towns during the week under notice were 6·5 in King's Norton, 6·6 in Hornsey, 7·1 in Leyton, and 7·3 in Wallasey; the rates in the other towns ranged upwards to 21·7 in St. Helens, 21·8 in Stockton, 24·0 in Middlesbrough, and 24·8 in Warrington. The 4419 deaths in the 76 towns showed a further decline of 276 from the decreasing numbers in recent weeks, and included 591 which were referred to the principal epidemic diseases, against numbers declining from 2570 to 807 in the six preceding weeks; of these, so many as 349 resulted from diarrhœa, while 60 were referred to measles, 58 to diphtheria, 45 to "fever" (principally enteric), 42 to scarlet fever, 37 to whooping-cough, and not one to small-pox. The deaths from these epidemic diseases were equal to a mean annual rate of 1·9 per 1000 in the 76 towns, and to 1·4 in London. The annual death-rate from these diseases was 0·0 in Southampton and 0·4 in Derby and in Willesden, while it ranged upwards in the other towns to 4·7 in Middlesbrough and in Bootle, 5·1 in Burnley, and 7·0 in Blackburn. The deaths referred to diarrhœa (mainly of infants under one year of age), which had declined in the six preceding weeks from 2342 to 550, further fell last week to 349; the annual death-rate from this disease during the week under notice was still so high as 2·8 in Merthyr Tydfil, 3·1 in Middlesbrough, 4·1 in Burnley, and 5·8 in Blackburn. The fatal cases of measles showed an increase upon recent weekly numbers, and caused the highest death-rates in Stockport, Oldham, Norwich, and Warrington. The deaths referred to "fever" were fewer by 20 than in the previous week, but showed a marked excess in Bolton. The highest death-rates from diphtheria occurred in Wallsall and West Hartlepool; from scarlet fever in Walthamstow; and from whooping-cough in Birkenhead. No case of small-pox was under treatment in the Metropolitan Asylums hospitals during the week, no case of this disease having been admitted thereto since the end of June. The number of scarlet fever cases under treatment in the Metropolitan Asylums hospitals and in the London Fever Hospital, which had increased in the seven preceding weeks from 3042 to 3803, further rose to 3923 during the week under notice; 548 new cases were admitted to these hospitals during the week, against 621 and 566 in the two previous weeks. The deaths in London referred to pneumonia and other diseases of the respiratory organs, which had been 188 and 187 in the two previous weeks, declined last week to 146, and were so many as 95 below the corrected average in the corresponding week of the four preceding years, 1902–05. The causes of 47, or 1·1 per cent., of the deaths registered in the 76 towns during the week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Leeds, Bradford, Newcastle-on-Tyne, Hull, and in 50 other smaller towns; the proportion of uncertified deaths showed, however, a considerable excess in Liverpool,

[2] The succeeding paragraphs relating to the resources and apparatus of the institution have not been transcribed.

Bootle, St. Helens, Barrow-in-Furness, Huddersfield, Halifax, and Gateshead.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 17·2 and 17·8 in the two preceding weeks, declined to 15·8 in the week ending Oct. 20th, but exceeded by 1·2 the mean rate during the same week in the 76 English towns. The rates in the eight Scotch towns last week ranged from 11·4 and 12·9 in Leith and Edinburgh to 17·1 in Glasgow and 22·1 in Greenock. The 540 deaths in the eight towns showed a decline of 69 from the numbers in the previous week, and included 78 which were referred to the principal epidemic diseases, against 77 and 96 in the two preceding weeks. These 78 deaths were equal to an annual rate of 2·3 per 1000, which was 0·4 above the rate from the same diseases in the 76 English towns. Of these 78 deaths, 47 resulted from diarrhœa, ten from whooping-cough, eight from diphtheria, five from measles, four from "fever," four from scarlet fever, and not one from small-pox. The deaths referred to diarrhœa, which had been 49 and 56 in the two previous weeks, declined again last week to 47, and included 23 in Glasgow, ten in Edinburgh, five in Dundee, and four in Greenock. Of the ten fatal cases of whooping-cough, eight occurred in Glasgow and two in Aberdeen. Diphtheria caused four deaths in Dundee and two in Edinburgh; all the five fatal cases of measles occurred in Aberdeen and two of scarlet fever both in Glasgow and Edinburgh. The four deaths referred to "fever" showed a marked decline from recent weekly numbers, and included three in Glasgow, one of which was certified as cerebro spinal meningitis. The deaths in the eight towns referred to diseases of the respiratory organs, including pneumonia, which had been 66, 72, and 80 in the three preceding weeks, further rose last week to 97, but were eight below the number returned in the corresponding week of last year. The causes of 22, or 4·1 per cent., of the deaths registered during the week were not certified; the mean proportion of uncertified deaths in the 76 English towns during the same week was 1·1 per cent.

HEALTH OF DUBLIN.

The annual death-rate in Dublin, which had been equal to 26·0 and 23·7 in the two preceding weeks, further declined to 21·7 in the week ending Oct. 20th. During the first three weeks of the current quarter the death-rate in the city averaged 23·8 per 1000, the mean rate during the same period being only 14·7 in London and 15·1 in Edinburgh. The 158 deaths of Dublin residents during the week under notice showed a further decline of 14 from recent weekly numbers, and included 21 which were referred to the principal epidemic diseases, against numbers declining from 52 to 20 in the six preceding weeks; these 21 deaths were equal to an annual rate of 2·9 per 1000, the death-rate during the week from the same diseases being only 1·4 in London and 2·1 in Edinburgh. These 21 deaths from epidemic diseases in Dublin included 11 from diarrhœa, four from "fever," two each from scarlet fever, diphtheria, and whooping-cough, and not one either from small-pox or measles. The four deaths from "fever" corresponded with the number in the previous week. The deaths of infants showed an increase, while those of elderly persons had declined. Eight inquest cases and only two deaths from violence were registered; and 50, or 31·6 per cent., of the deaths occurred in public institutions. The causes of five, or 3·2 per cent., of the deaths registered during the week were not certified; the proportion of uncertified deaths last week was only 0·6 in London and 3·6 in Edinburgh.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Inspector-General G. J. Irvine to Chatham Hospital. Fleet Surgeons: E. Corcoran to the *Africa*, on commissioning, and G. A. Waters to the *Ramillies*, on recommissioning. Staff Surgeons: R. St. G. S. Bond to the *Hermione*; R. A. Ross to the *Highflyer*, on completing; S. H. Facey to Portland Hospital; W. P. Macleod to the *Diana*; and M. P. Jones to the *Wildfire*. Surgeons: D. G. Addison-Scott to the *Highflyer*, on completing; H. Cooper to the *Diana*, on recommissioning; W. Bastian to the Royal Marine Division, Plymouth; G. O. M. Dickenson to the *Africa*; A. R. Thomas, E. O. B. Carbery and G. M. Eastment to the *President*, for three months' course at West London Hospital; P. D. McJ. Campbell to the *Sealark*, on recommissioning; and C. H. Dawe to the *Vernon*. Civil Practitioner M. Clover to be Surgeon and Agent at Portloe and Portscatho.

ROYAL ARMY MEDICAL CORPS.

The Commander-in-Chief in India has nominated the tour-expired officers of the Royal Army Medical Corps detailed in the following list to proceed to England in the transports named. In each case the officer first named is in medical charge of the transport: The *Assaye* sailed from Bombay on Oct. 5th, Lieutenant-Colonel C. E. Nichol, D.S.O., Captain J. H. Robinson, and Captain R. T. Brown. The *Dongola* sailed from Bombay on Oct. 19th, Lieutenant-Colonel G. W. Brazier Creagh, C.M.G., Captain R. N. Hunt, and Captain R. V. Cowey. The *Plassy*, hospital ship, will sail from Bombay on Nov. 2nd, Lieutenant-Colonel J. R. Yourdi, Captain J. Dorgan, and Captain A. H. McN. Mitchell. The *Rewa* will sail from Karachi on Nov. 17th, Major G. J. Buchanan, Captain B. S. Bartlett, and Captain T. H. Stevenson. The *Assaye* will sail from Bombay on Dec. 7th, Major H. P. Johnson, Captain C. R. Evans, and Captain A. W. Gibson. The *Dongola* will sail from Karachi on Dec. 21st, Lieutenant-Colonel J. B. W. Buchanan, Captain W. J. Waters, and Captain F. A. H. Clarke. The *Plassy* will sail from Bombay on Jan. 4th, 1907, Lieutenant-Colonel H. L. Battersby, Captain H. E. M. Douglas, V.C., D.S.O., and Captain T. J. Potter. The *Rewa* will sail on Jan. 17th from Bombay, a field officer will be detailed in charge later, Captain A. R. O'Flaherty and Captain A. R. Geenwood proceed home on this vessel. The *Assaye* will sail from Bombay on Feb. 8th, Major Withers, Captain J. P. J. Murphy, and Captain Hyde. The *Dongola* will sail from Karachi on Feb. 20th, Lieutenant-Colonel R. G. Hanley, Captain F. S. Penny, and Captain W. Sparkes.

Captain John T. Clapham, from temporary half-pay, is placed on retired pay (dated Oct. 21st, 1906).

ROYAL ARMY MEDICAL CORPS (MILITIA).

Supernumerary Captain H. Fox is absorbed into the establishment (dated Oct. 5th, 1906).

IMPERIAL YEOMANRY.

Surrey (the Princess of Wales's): Surgeon-Lieutenant R. C. Gayer to be Surgeon-Captain (dated Sept. 17th, 1906).

HONOURABLE ARTILLERY COMPANY OF LONDON.

Surgeon-Lieutenant Colonel W. C. James is granted the honorary rank of Surgeon-Colonel (dated Oct. 8th, 1906).

VOLUNTEER CORPS.

Rifle: 3rd (Cambridgeshire) Volunteer Battalion the Suffolk Regiment: Surgeon-Captain F. A. Wagstaff resigns his commission (dated Oct. 6th, 1906). 2nd Volunteer Battalion the Lancashire Fusiliers: Surgeon-Lieutenant-Colonel C. W. Thorp is granted the honorary rank of Surgeon-Colonel (dated Sept. 20th, 1906); Surgeon-Major W. Pooley is granted the honorary rank of Surgeon-Lieutenant-Colonel (dated Sept. 22nd, 1906). 2nd Volunteer Battalion the York and Lancaster Regiment: Surgeon Lieutenant A. Robinson to be Surgeon-Captain (dated Oct. 24th, 1906).

DEATHS IN THE SERVICES.

Surgeon-Major Walter Leach, A.M.D., at his residence, Martock, Somerset, on Oct. 13th, in his seventy-ninth year. He joined the Army Medical Department in 1854 and retired when surgeon-major in 1875. He was in medical charge of the Left Wing of the 71st Highlanders during the Central India Campaign, and was present at the battles of Beora, Morgroulie, and Sindwazu. He was also at the affair of Karrai (medal).

WIGAN MEDICAL SOCIETY.—The annual meeting of this society was held on Oct. 6th. The following office-bearers were elected for the ensuing session. President: Dr. Ferdinand Rees. Committee: the President, the ex-President, Mr. T. M. Angior, Mr. C. M. Brady, Dr. R. P. White, Dr. George Wolstenholme, Dr. M. Benson, Dr. J. M. Boyd, and Mr. C. F. France. Honorary treasurer: Mr. E. H. Monks. Secretary: Mr. William Berry.

Correspondence.

"Audi alteram partem."

PURIN-FREE DIETS.

To the Editors of THE LANCET.

SIRS,—When doctors disagree, who shall decide? Unfortunately, in the matter of treatment there is sad disagreement among them. So much so, indeed, that one may well question whether therapeutics has yet attained to the dignity of a science. A science implies the codification of a number of propositions having such a show of truth as to be accepted by all its serious students. Applying this test, are we justified in including therapeutics among the sciences? I fear not; for there is scarcely a disease regarding the treatment of which physicians show anything like agreement. Therapeutics can never, it is true, become an exact science, since it is always the individual patient rather than a stereotyped disease that has to be treated. Nevertheless, it is much to be regretted that physicians are not one and all agreed on elementary principles, but that each gangs his ain therapeutic gait, to the bewilderment and sometimes, I fear, amusement of the general public.

Nothing better shows the chaotic state of present-day therapeutics than the hopeless disagreement that prevails regarding the dietetic treatment of disease. For many years past we have been taught by a band of enthusiasts that uric acid is a deadly poison and responsible for most (if not all) the ills to which flesh is heir; and so sedulously and successfully has this dogma been disseminated that the public has been wrought up into a veritable uric acid mania—a circumstance of which the enterprising chemist has not been slow to take advantage.

But what is the actual truth regarding the toxic action of uric acid? This, that—as Bouchard has shown—it is no more poisonous than distilled water. No doubt benefit can often be got from a so-called purin-free diet; but, as Dr. Francis W. E. Hare has shown in his remarkable work "The Food Factor in Disease," the disorders which can be benefited in this way can be equally, if not more, successfully treated on a diet containing an abundance of purin bodies, if only the carbonaceous ingredients be curtailed. Any one can prove the truth of this for himself.

A knowledge of man's past dietetic history should alone suffice to give the *coup de grâce* to the uric acid fallacy and the belief that animal food is necessarily injurious to man. In my papers on "The Evolution of Man's Diet," published in THE LANCET in 1904, I endeavoured to show that from the anthropoid period of his phylogeny down to the discovery of cookery he became increasingly carnivorous, until he actually came to consume more animal than vegetable food; and that even when he had learnt to prepare his food by cookery and other means, and thus to increase his vegetable supply, he still continued to be largely carnivorous, as is shown by the dietetic customs of the surviving precibiculturists who consume, on an average, about equal parts of animal and vegetable food. It was not until the agricultural period was well advanced, and the supply of vegetable food thus enormously increased, that man came to consume distinctly more vegetable than animal food, and in some cases even to subsist on vegetable food alone. In other words, man—proud man, "the roof and crown of things"—has evolved from the ape on a highly animalised diet. It was on such a diet that during some hundreds of thousands of years he slowly mounted up the rungs of the evolutionary ladder which leads from the beast to the man, that he evolved the faculty of language, the power of self-analysis, of pondering on the past and present, and speculating as to the future; on such a diet that he first dreamed of a life beyond the grave.

If, then, man has passed from such depths to such heights on a richly animalised food, what folly to contend that food of this kind is necessarily poisonous to him. Man is omnivorous and distinguished from all other animals by his extraordinary adaptability to foods of different kinds. It is this adaptability, coupled with his skill in cultivating and preparing his vegetable food, that has enabled him in some parts of the world to become almost entirely a vegetarian; and it is this adaptability and this skill, fortified by a growing moral sense, which will one day perhaps lead him to refrain altogether from eating that which has once throbbed with the pulse of sentient life. This may come; this ought, I think, to come. As at present constituted, however, man is largely carnivorous in nature and it is idle to pretend otherwise.

I am, Sirs, yours faithfully,

Wimpole-street, W., Oct. 21st, 1906. HARRY CAMPBELL.

MEDICAL MEN USING MOTOR-CARS.

To the Editors of THE LANCET.

SIRS,—Will you allow us, on behalf of the committee of medical men who are users of motor-cars, to call attention to a matter of importance? Under the existing Motor-car Act, which has been temporarily prolonged, the owners of motor-cars are called upon to pay (1) for a licence to drive; (2) a registration fee; and (3) a carriage tax of £2 2*s.* for cars under one ton weight, and of £4 4*s.* for cars over a ton weight.

Now there are good reasons for anticipating that in the Act which is being drafted the last of these three will be materially increased, and that cars will be taxed according to either their weight or horse-power. In either case the new taxation will fall heavily upon medical men, who, owing to the exacting nature of their work, the requirements of reliability, the rough roads and steep hills they have to traverse, must use substantially built cars with adequate horse-power. It is not right that motors used by medical men in their daily work should be taxed as though they were the pleasure vehicles of the rich. The medical man has neither time nor money to allow of such luxuries; his motor-car has to be used strictly for professional purposes, and, in consideration of the enormous amount of gratuitous work that he does, ought to be exempt. Surely it is to the advantage of the public to encourage the use by medical men of a means of progression which enables them to render such speedy help in moments of emergency. It is, however, likely that heavy taxes will be thrown upon medical men unless they bestir themselves and try to defend their own interests. We would, therefore, suggest that each medical man should forthwith write to his own Member of Parliament or to any others that he may know for protection and support. Those members of the public who are favourably disposed are asked to write to Members of Parliament and express their sympathy with this movement.

We remain, yours faithfully,

C. B. LOCKWOOD,
Chairman of Committee of Medical Men who are users of Motor Cars:
H. E. BRUCE PORTER,
Honorary Secretary.

6, Grosvenor-street, London, W.

MEDICAL BARRISTERS.

To the Editors of THE LANCET.

SIRS,—Twelve months ago you kindly published a list of medical barristers which I had compiled.[1] Since then, owing largely to the publicity afforded by your columns, I have been able to extend and in a few cases to correct the previous provisional list. Before the days of *registered* medical practitioners it is, however, somewhat difficult to know when a man should be called a medical man. Thus the following well-known barristers commenced the practice of medicine but forsook it for the law: Lord St. Leonards (Lincoln's Inn, 1807), was son of a barber-surgeon; Joseph Chitty the elder ("called" by Middle Temple, 1816) was diverted from medicine by Lord Erskine; Charles Wilkins (1835) and Samuel Warren (1837) probably never were more than students; the same may be said of William Campbell Sleigh (Sjt.) (Middle Temple, 1846); Sir Thomas Dickson Archibald (Middle Temple, 1852), is said to have been a medical practitioner in Canada, he was called to the Nova Scotia Bar in 1837.

The names which should be added to the first list are:—1803: William Warren Baldwin (Ontario Bar). 1819: John Rolph (Inner Temple and Ontario Bar in 1821). 1870 (June): Frederick Victor Dickins (C.B.) (Middle Temple). 1883 (January): Robert John Price (Middle Temple). 1895 (May): Sidney Iorwerth Mansel-Howe (Gray's Inn). 1903 (June): George Jones (Gray's Inn); (November) John Spencer Low (Middle Temple). In addition to these, 11

[1] THE LANCET, Nov. 4th, 1905, p. 1360.

medical men have been "called" and their names duly recorded in your columns during the past year.

I should be greatly obliged if your readers would send me the names of any medical men who have held seats in the Imperial Parliament—it would be a matter of interest to trace their personal influence upon the public health legislation of last century.—I am, Sirs, yours faithfully,

STANLEY B. ATKINSON,
an Honorary Secretary of the Medico-Legal Society.

10, Adelphi-terrace, London, W.C., October, 1906.

THE HISTORY OF ORGANOTHERAPY.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of Oct. 20th, p. 1087, you refer to an interesting fasciculus by Professor Hugo Magnus, in which he demonstrates the antiquity of the use of organic extracts derived from the blood, glands, and different organs of the body. In the annual oration which I delivered before the Hunterian Society in 1902, the title being "Organotherapy, Ancient and Modern," I dealt very fully with the historical aspect of the subject, both from the classical and barbaric sides, starting in the former case from the Ebers Papyrus, 1500 B.C., where human brains are prescribed for diseases of the eye, and in the latter case from the remote practice of the Central Tribes of Australia of using the semen as a tonic for the sick.

I am, Sirs, yours faithfully,

London, Oct. 23rd, 1906. ARTHUR T. DAVIES.

THE PREVENTION OF SMOKE IN LONDON AND IN PROVINCIAL TOWNS.

To the Editors of THE LANCET.

SIRS,—I was pleased the other day to notice in THE LANCET that you were advocating State action *re* smoke abatement, and I am thoroughly convinced with you that Government action is absolutely necessary if the atmosphere of towns and cities is to be fit to breathe. I have just returned from India, having been out there six months as smoke expert for the Government, and before I left owing to Government action there was proof of less smoke being made. Over three years ago I suggested to the Local Government Board the creating of a smoke department and a practical policy of administration. They informed me that the suggestions had been placed on record for consideration in the event of Parliament deciding to take action on the question, but I had a letter a few weeks ago from the Prime Minister stating "that Parliament did not propose taking any action at present." I suppose they are waiting till the public demand action. I may mention that I gave a paper before the Royal Sanitary Institute Congress at Bradford on the smoke question and one at the Smoke Abatement Conference in London in December last.

I am, Sirs, yours faithfully,

WM. NICHOLSON,
Chief Smoke Inspector, Sheffield.

ZENANA BIBLE AND MEDICAL MISSION.

To the Editors of THE LANCET.

SIRS,—Will you allow me through your columns to make known a great need at one of our hospitals in India? Miss Helen B. Hanson, M.D. Lond., writes from the Lady Kinnaird Memorial Hospital at Lucknow that they are in great need of a steriliser. She has many important operations and hitherto they have managed the sterilising with very primitive native appliances, which are slow and troublesome. It would be a great help and comfort to our lady doctors if any of your readers would kindly see their way to make us a gift of a steriliser. I am, Sirs, yours faithfully,

A. R. CAVALIER,
2, Adelphi-terrace, W.C., Oct. 23rd, 1906. Secretary, Z.B.M.M.

THE BIRDS OF THE BRITISH ISLANDS.

To the Editors of THE LANCET.

SIRS,—While thanking you for your review of the first two parts of Mr. Stonham's "Birds of the British Islands," there is one point on which I should like, if I may, to correct your critic. There is, he says, no standard of comparison of the size of the birds. I promised in my prospectus that in those cases in which it was impossible to reproduce the birds life size the scale of reduction would be indicated and this promise will be kept. In the parts under review the birds are all reproduced life size; when we come to the later parts dealing with bigger birds the plates will in each case bear what information is necessary.

I am, Sirs, yours faithfully,

E. GRANT RICHARDS.

Carlton-street, Regent-street, S.W., Oct. 19th, 1906.

"ADVERTISING AND DENTISTRY."

To the Editors of THE LANCET.

SIRS,—The editor of the *Dental Surgeon* posted me yesterday an advance proof of an article entitled "Advertising and Dentistry" which is quoted from THE LANCET. Now, I have not seen THE LANCET in which the original article appeared, nor had I heard of its appearance until this morning, but I hope, in common fairness to me, you will admit this reply. Whatever advertisements I have issued in the past I do not now and have not for many years issued an advertisement relative to dental surgery; the nearest approach to anything which could be construed into such being a bare announcement of removal, when I took my present chambers in March last, and a copy of which I herewith inclose.

As to the circular *re* my forceps "having been pushed under a layman's door in Bradford," I should very much like to know (1) whose door it was pushed under and when; (2) by whom; and (3) who sent it to you; for I emphatically assert that not one of these circulars has been sent out by me or by anyone whom I employed! It is sixteen years since these circulars anent my forceps were printed! One thousand only were printed, and these were solely and entirely printed for private circulation among local medical and dental practitioners! Had I caused these circulars to be distributed from door to door, as you seem to imply, I could better have understood your remarks about this "vulgar publication" and the accusations you make against me, mainly, presumably, on this account, but knowing that I am guiltless of causing them to have been issued in anything like an unprofessional manner, I am quite at a loss to understand the extremely bitter attack you make upon me! As to the medical profession dissociating themselves from the circular in question, they would most assuredly have done so years ago had they discovered me making improper use of their names, and very justifiably too! What, however, pains me most is the fact that some unscrupulous person should devise such unworthy methods of attack! I unhesitatingly affirm that this sixteen-year old circular, addressed, as even you yourselves must admit, to medical men only, was "pushed under a layman's door in Bradford" at the request or at the instigation of some party who was desirous, and who evidently is still desirous, of doing me an injury, not only in the eyes of the profession, but in the eyes of the public and the world of letters also. Some man of indescribable meanness has, I affirm, planned this cowardly conspiracy against me! He has treasured up this circular for nearly a score of years and then used it in this manner! Were you to offer £5 for each copy of it, *without the doctor's name on, to whom it was sent*, you would not receive a single reply! In regard to "Who's Who" (I am proud to appear therein—I wonder who would not be?) I had a form sent to me from the office of that publication, without any solicitation on my part, and of course as you surmise (and as doubtless you know) I did fill it in myself—who more likely? But, in filling it up I gave the "sources" of all my degrees and qualifications! These, the editor—exercising, wisely or unwisely, his editorial prerogative—deleted, even as you might delete some portion of this letter, which, however, I hope you will not do, and as I delete items in my capacity as editor of *Yorkshire Notes and Queries*. I was very sorry indeed that the editor of "Who's Who" thought fit to do this, but you will find the omission rectified in this year's "Literary Year Book." You say it would be of interest to have the information as to the sources of my LL.D., D.C.L., D.D.S. Well, here you are (though I may say they have appeared already in scores of journals). I am, *honoris causa* that is to say, without passing any examination and (your readers will find this interesting) without paying any fees! M.D. of the National

Medical University, Chicago—the "Medical University" bear in mind and "not" the National University—1904, D.C.L. of Washington University 1903, and of Potomac University 1905, LL.D. of Greeneville and Tusculum College, Tennessee, 1888, D.D.S. Baltimore College of Dental Surgery, 1891. I am proud of these distinctions and never hesitate about telling all and sundry from whence they emanate. In conclusion, I admit that I am "the author of numerous booklets, poems, ballads, and so forth." I dare say if you visit the British Museum, and look up the catalogue you will find my name attached to about fifty books of one sort and another! We will say nothing about the literary merit of them, but there they are, and their publication is the result of twenty-five years' strenuous work which has involved an outlay of something like £5000. Doubtless these works have had something to do with my election as a fellow or as a member of the societies you name, for the results of my "rambling in pursuit of antiquities" have not only been published in volume form and read before a hundred societies, but have appeared in upwards of five thousand magazines and newspapers.—I am, Sirs, faithfully yours,

CHAS. F. FORSHAW, D.D.S.,
Honorary Dental Surgeon to the Actors' Association, the Music Hall Artists' Association, the Bradford Orphanage for Boys, the Women's Home and Shelter, and the Deaf and Dumb Institution.
20, Otley-road, Bradford, Oct. 19th, 1906.

P.S.—I will give fifty pounds to the Bradford Royal Infirmary if it can be proved that these "Forceps Circulars" have been "pushed under the doors" of the houses of the laity, or in any way distributed in a general manner to the public!—C. F. F.

*** According to the Official Directory of Professional Education in the United States, published by the University of the State of New York for 1900, there is no such body as the National Medical University of Chicago. There is a National Medical College of Chicago, which is a homœopathic institution. Washington University is difficult to identify. There are medical departments in the Columbian, Georgetown, Howard, and National Universities in the District of Columbia, but none can be called Washington University. The Washington University School of Medicine in Baltimore has ceased since 1878 to be known by that title. There is a University of Washington of which the post town is Seattle, and another of which the post town is St. Louis. This appears to be a law school. Potomac University we can find nothing about in the Official Directory or in Engelhard's Standard Medical Directory. Greeneville and Tusculum College, Tennessee, we have found in an Education Report of Public, Society, and School Libraries, 1899-1900, and Baltimore College of Dental Surgery is a well-known college. But here, where we might expect to be on safe ground, we are additionally puzzled. We pointed out that in the circular upon which we commented, and which we now learn was printed 16 years ago, Mr. Forshaw claimed to be "D.D.S. (Exam.)." Now, apparently, he argues that his D.D.S. is given "*Honoris causâ*," that is to say, without passing any examination. The two statements seem incompatible. Moreover, in his letter he gives the date of his Baltimore degree as 1891 as well as implies that it was an honorary degree, while the circular was published with the claim of a degree by examination before 1891.—ED. L.

THE WEST INDIAN COLONIAL MEDICAL SERVICE.

To the Editors of THE LANCET.

SIRS,—To anyone who may be thinking of taking up a Government medical appointment in the West Indian islands a few words of advice may be useful. In THE LANCET of April 29th, 1905, pp. 1151-1154, the anomalies and contradictions of the Colonial Medical Service are lucidly indicated, and all those interested would do well to read this article very carefully.

Speaking as a member of the West Indian Colonial Medical Staff, I may mention that the salaries, allowances, private practice, &c., are subject to wide variations. As you point out in the above-mentioned article, "salaries differ with no apparent difference in work or responsibility. In some places there is a widows' and orphans' fund; in others, there is not, and when it is deducted, percentages are not uniform. ..... In some places the service is largely recruited from the native-born, who are given the better berths, and in others they do not seem to be taken into consideration. There are no settled rules about pensions, allowances, or extra fees. ..... There are no provisions for promotion which entail that the headship of the medical department in a colony will be obtained by a member of the medical staff of the colony, so that men may be suddenly disappointed in their hopes of securing berths which had seemed well within their grasp. When it is remembered that some appointments are made by the Foreign Office, some by the Colonial Office, and some by colonial governors, ... it will be seen that it is no over-statement to allude to the service as 'in a muddle.'" Take the case of a medical man who obtains one of these appointments in England through the Colonial Office. He will only obtain general knowledge relating to his appointment. Detailed knowledge he will not get. Whether this is due to the Colonial Office not having detailed information, or whether it is due to its unwillingness to supply it, I do not know, but I am inclined to think it is due to the former. But a candidate will invariably find that he will have to pay £30–£40 a year rent for his house; he will have to purchase a horse, and often a buggy; he may have to buy a boat (part of the work often being done by a boat); he will have to furnish his house; he will have to pay income-tax and other taxes. It will therefore be apparent that his initial expenditure will not be a small one.

With regard to private practice, this is a most uncertain quantity. In some cases it may be nil; in others, it may be a useful auxiliary; in a very few cases it may be extraordinarily good, so good, in fact, that the official salary is a mere "drop in the ocean" compared to it. Take my own case, for instance. My salary is £240 a year (minus income-tax). I get £30 a year drug allowance, which is only just sufficient to cover my drug bills. I get 1*s.* for each vaccination performed (about £10 a year). If I give evidence before a magistrate (this is a most seldom occurrence) I get a fee of 10*s.* I am not entitled to any fee for post-mortem examinations or for giving evidence before a coroner, or any other allowances whatever. My private practice works out at £10 a year. I am not entitled to any pension. I might remain here for 20 years (my predecessor was here for 30 years, but in his time there was a pension scheme, and he now has a very small pension to subsist on), and what would I have at the end of it? Absolutely nothing, for I am not able to save anything, and I have nothing to look forward to but penury in my old age.

I am entitled to six months' leave at the end of three years' service on half-pay. My pay would, for this period, amount to £60, and would therefore only just cover my passage money. And the obtaining of leave is no small difficulty, for a locum-tenent has to be found to do one's work for £60 for the six months one is away, and naturally it is only with great difficulty that such a person can be found. Again, to an Englishman the climate is about one of the most trying in the whole world. In many places malaria exists in its worst forms. The life is often a terribly lonely one, for the people around will be almost exclusively members of the black race. There can be no doubt that for any self-respecting Englishman to accept a medical appointment in the West Indies, under present conditions, is nothing short of madness; and if he be married it would be a suicidal policy, as the climate is especially prejudicial to English women and children.

As you point out in your article, "the successful organisation of the West African Medical Service makes it a practical question to ask why the Colonial Medical Service of the empire should not be organised on similar lines." And I quite agree with you that it should be placed on a similar basis to that of the Army and Indian Medical Services, &c. For the Colonial Medical Service is every bit as arduous as either of these services, if not more so. There can be no doubt that private practice is at the root of the evil in the Colonial Medical Service. And although it would be perhaps difficult to abolish it, it certainly should not be encouraged.

As you remark, "the whole service should be a definite department of the Colonial Office." There can be no doubt that the principal medical officer in each colony should be

directly responsible to the Secretary of State for the efficiency of his department. Governors, administrators, and such officials should have nothing whatever to do with the medical arrangements except in the very most exceptional circumstances. What we most urgently need is fair pension, progressive pay, due promotion, necessary allowances, and adequate leave on full pay. Private practice should not enter into the arrangement at all.

I am, Sirs, yours faithfully,
MEDICAL OFFICER.

"THEN AND NOW, IN SURGERY."

To the Editors of THE LANCET.

SIRS,—In comparing and contrasting "Then and Now, in Surgery," may I venture to point out with reference to Mr. C. A. Ballance's remarks on the successful transplantation of organs, that none of the moderns have yet equalled the performance of Cosmas and Damian.

It is written: A man had a cancer of the leg; he went to pray in the church of St. Cosmas and St. Damian in Rome. He soon fell asleep. The saints whom he had implored appeared to him, one carrying a box of ointment, the other a scalpel. "How shall we replace the limb when we have cut it off?" said St. Cosmas. "A Moor has just been buried," replied St. Damian, "let us take his leg and put it in the place of this one." No sooner said than done. When the patient awoke he was healed; *only he had one black leg.*

I am, Sirs, yours faithfully,
J. T.

Oct. 22nd, 1906.

PRESCRIBING BY OPTICIANS.

To the Editors of THE LANCET.

SIRS,—The letter and annotation on Prescribing by Opticians which appeared in THE LANCET of Oct. 13th deal with a problem bristling with difficulties. To call a sight-testing optician a "spectacle quack"—to record cases of evil treatment by him—to deplore the deception of ignorant people who frequent his parlour, gulled by the specious advertisements of himself as an eyesight specialist and connoisseur in everything appertaining to spectacles—all this every well-informed and experienced medical man must admit as just as it is futile. The time has surely come for concerted action, and to consider the means whereby this action can be in part transmuted into legislative machinery which will proscribe the "optologist" and place his work under a ban.

Some time ago, Sirs, I outlined for your consideration a scheme of such concerted medical action to combat quackery. To deal in particular with optologists and to stop their poaching on our ophthalmic preserves we have to consider three factors—viz., the private man, the medical man, and the optical man. The private man from the medical standpoint can be treated, on the one hand, as an inert mass, devoid of reason, and falling by advertisement as surely as a stone to earth by gravitation. On the other hand, he is a thinking unit who buys in what he deems the best market, and provides himself with suitable spectacles according to the height of his position and the depth of his pocket. The ophthalmic surgeon prescribes spectacles for a guinea, maybe two; the general practitioner who glasses his patients is a *rara avis* who inspires curiosity rather than confidence; eye hospitals are, and not without reason, viewed with suspicion, and present deterrent features, if not actually a notice that "patients are not tested for spectacles." The druggist, the optician, and the "optologist" are therefore left with a pretty clear course to entice the foolish, or necessity driven many, by cunningly worded advertisements devised to "catch if you can."

Contrast the position of the second factor, the medical man who is bound over on the side of silence. The wolf can howl, but the lamb may scarcely bleat for help or move to circumvent the machinations of his enemy. As you say, Sirs, "We must stand absolutely aloof from the devices of competition." ("What is Specialism?" p. 883.) We, in general practice, must not indicate in any manner that we do special work. Those of us who have taken up eye-work as a specialty have to sit down and wait for the discerning public to discover the refractionist in his retreat and to give him a chance of proving that he is an "eyesight specialist" whose skill, at least, outvies that of the proclaiming optologist!

And how many general practitioners do refraction work or could conform to the standard implied by your statement "that no one is justified in ordering glasses until he has corrected a very large number of refractions under skilled supervision"? And what is the fate of the refractionist in general practice? My experience is that his *confrères* ostracise him for daring to do special work which they cannot perform and that they will not send him a single refraction case *because he is a general practitioner*, and therefore a competitor. They prefer to despatch their cases to hospitals or oculists, or they will actually assist the optologist by sending him cases to glass and demean themselves by asking for an eye report on their headachey patients! Such conduct makes me ask whether these medical men are in the habit of sending for a midwife to assist them when confronted with a difficult labour?

Thus can it be demonstrated how feeble is the spirit of union amongst members of the medical profession. We, who in private life applaud unity and deplore personal antipathies, and who, in our medical societies, champion unity and urge loyalty to our profession, yet in the exercise of our profession we suspect one another, are envious of individual success, and are full of petty intrigues. I venture to suggest, Sirs, that as a preliminary to tackling the "ophthalmic optician" difficulty we must purge ourselves from much that is paltry; we must fit ourselves to prescribe spectacles as well as the most skilful optologist; we should be permitted to indicate our preparedness to refract to the general public; and then as brethren take counsel together in our respective towns, to prepare a scheme of graduated fees for the poor but more respectable, as a check to hospital abuse and optician misuse.

With regard to the third factor—the optologist himself—he is not entirely bad. The one in the town in which I practise is a conscientious man skilled in refraction. He refracts ten (perhaps 20) cases to my one, and thus in proportion deprives me of legitimate fees which, I must yet admit, he earns as well as, if not better than, many a medical practitioner who treats diseases of the eye. He brings me occasional patients, for which I am truly thankful, and were it ethical and practicable I would rejoice in a partnership which would link such an optologist and myself in holy communion.

I am, Sirs, yours faithfully,
M.D., B.S. LOND., D.P.H. CAMB.

THE INTERNATIONAL CONFERENCE ON CANCER.

(FROM OUR CORRESPONDENTS.)

(Concluded from p. 1099.)

THE members of the Conference who travelled from Heidelberg to Frankfort met at the Senckenberg Institute in the latter city on the morning of Sept. 26th. This institute, which comprises among its buildings a library and a hospital, was founded by the benevolence of a medical man. The members of the Conference were received by Councillor Kirschner in the name of Minister Studt who was one of its promoters. A telegram of welcome from Ministerial Director Althoff was read by Professor Leyden.

Dr. COHN, representing the Medical Association, expressed great satisfaction that surgeons, pathologists, and bacteriologists had assembled to work together and to interchange their views instead of following the present-day tendency towards not only specialisation but even over-specialisation. He said that he felt complete confidence in the methods adopted and the views held by those who were engaged in the investigation of the subject of cancer.

Professor EHRLICH read his report on the Investigations carried out at the Institute for Experimental Therapy. The foundation of a special department for cancer research at the Frankfort Institute for Experimental Therapy had made Frankfort a centre for the study of cancer, so that the members of the Conference met at Frankfort to see some of Professor Ehrlich's unique specimens. Some 280 cancerous growths, excised chiefly from mice, had been thoroughly investigated. Some 1200 mice were under experimental observation in this institute. Mice which had been experimented upon, microscopic specimens, and demonstrations with the epidiascope (carried out by Dr. Apolant) illustrated

Professor Ehrlich's paper. He said that with the transplantation experiments of Hanau, Moreau, and Jensen a new epoch had originated in the study of cancer. These observers had shown that certain tumours in mice and rats—recognised by Ehrlich and Apolant as mammary tumours—could be transplanted from one animal to another. The present position of science permitted of the following classification of malignant tumours: (1) carcinoma arising from glandular epithelium; (2) sarcoma or connective tissue tumours; and (3) chondroma or cartilaginous tumours. He commenced his investigations on cancer from the bacteriological standpoint but he protested against the opinion that he was a stern upholder of the "parasitic theory." Hitherto 300 mouse tumours had been investigated under his direction. Such a large number became necessary because only a small percentage could successfully be transplanted into other animals. From 108 transplantations only nine grew persistently, due to unknown factors. Michaelis had shown that tumours could not be transplanted from Copenhagen mice to Berlin mice, but by the process of natural selection it was possible to increase the virulence in some species by only transplanting the best-growing tumours. This procedure met with such success that the power of growth of the tumour exceeded anything seen in man, malignant tumours in a few weeks exceeding in size the animal itself. As already stated, the tumours were cancers of the mamma and it was extremely interesting to observe that these cancers, after some successive inoculations, assumed a sarcomatous character and finally became sarcomata. Dr. Haaland succeeded in separating these mixed tumours into their components and in producing either sarcoma or cancer by further inoculation. This was done by exposure of the growth to somewhat high temperatures, against which the cancer cells were less resistant and therefore perished. On the other hand, by mixing small particles of sarcoma and cancer and inoculating the mixture into mice mixed growths were produced. As to the influence of temperature on the cells, Professor Ehrlich stated that cells which were exposed to temperatures from $-25°$ to $+30°$ C. did not lose their virulence. In one case cancer developed after the inoculation of a growth which had been kept for two years at a temperature of $-10°$ C. Professor Ehrlich was of opinion that a growth might be kept virulent for ten years and more at similar temperatures. The cells of chondroma were still more resistant, its growth continuing at a temperature of $-100°$ C. Inoculation of chondroma had been successful in nearly every instance; it, however, grew more slowly than cancer and sarcoma. It contained numerous blood-vessels which did not exist in cancer and sarcoma produced by inoculation but were present in spontaneous growths. Professor Ehrlich then spoke of his experiments on immunisation. Proceeding in accordance with the methods of bacteriological immunisation he inoculated mice with particles of slowly growing and therefore less virulent tumour. He afterwards found that when mice were inoculated with specimens of very malignant cancer (1) with and (2) without a previous injection of less malignant particles the animals of the latter category became cancerous, whilst those of the former remained healthy. Mice immunised in this way against cancer became exempt from sarcoma likewise. Professor Ehrlich then mentioned the interesting fact that cancer might be conveyed from a mouse to a rat. In the rat it grew fairly well at first but after a lapse of eight or ten days it gradually began to disappear and it was not found possible to convey the cancer from that rat to another rat. He was of opinion that for the existence of cancer there must be a specific agent which was present in the organism of the mouse but not in rats.

Professor SPIESS (Frankfort) then gave an account of his experiments on injections of anæsthetics, especially of a solution of cocaine, into cancer of mice. Injections were given to 74 animals and in 54 of these the growth underwent caseous degeneration, the resulting débris being afterwards discharged. The effects were especially favourable in slowly growing tumours. In several cases mice which had recovered under the use of cocaine were reinfected a second and a third time by inoculation of cancer cells and again successfully treated by the above method.

Professor HERXHEIMER and Dr. HÜBNER (Frankfort) showed 20 patients who had suffered from cancroid disease of the skin and had recovered under the use of radiotherapy. The procedure consisted in first destroying the malignant epithelium by rays of high intensity and then applying weaker rays to produce cicatrisation.

Dr. LEWISOHN (Heidelberg) described the results which he had obtained by the use of radiotherapy in cancer, exclusive of cancroid disease. The x rays had an analgesic influence and in ulcerating growths the discharge became less abundant. In many cases a transitory diminution of the growth was obtained but permanent healing never occurred. The production of metastasis seemed to be accelerated by radiotherapy.

Dr. BORREL (Paris) spoke on the pathogenesis of cancer and mentioned cases in which cysticerci had been found in the centre of malignant growths occurring in the livers and kidneys of rats. He also said that an intestinal worm had been found in a lymphoma of the lung of a mouse. The hypothesis that intestinal worms might convey the virus of cancer in certain cases was in accordance with the frequency of cancer in the gastro-intestinal canal. He said, however, that a uniform etiology did not exist for the development of cancer which obviously was produced by manifold causes.

Dr. PRINZING (Ulm) said that there was a high mortality from cancer in Southern Germany, the Austrian Tyrol, and North-Eastern Switzerland, and he showed a map on which the respective districts were marked. It was remarkable that in a certain district some places showed a high while others showed a low mortality and that this state of things had continued for the last 25 years.

Dr. BEHLA (Stralsund) read a paper on the Relation between Water and Cancer in its Geographical Distribution.

Dr. STICKER (Berlin) read a paper on Endemic Outbreaks of Cancer.

The practical conclusions to be drawn from these papers were (1) that the transmission of cancer having been proved beyond controversy in animals, its direct transmission in the human subject could no longer be doubted; (2) that the frequency of cancer in certain families was to be explained by direct transmission; and (3) that if there were inoculable cancers, prophylactic measures against transmission should be taken to safeguard the healthy members of the family.

The only paper read by an Englishman was one on the Causes of Cancer of the Breast (Clinical), with some remarks upon the connexion between irritation and the production of malignant growth (experimental), by Mr. CECIL H. LEAF, surgeon to the Cancer Hospital, London. Mr. Leaf, having referred to the various clinical causes of cancer of the breast, in particular to the part played by errors of lactation, tuberculosis, and climatic conditions, stated that his work of many years had failed to produce anything comparable to cancer by irritation of the mammæ of dogs.

Several papers were read treating of the Chemistry of Cancer.

Dr. SPRUDER (Friedland), as a result of his work in the field of micro-chemistry of cancer of the skin, thought that he could prove the presence of a special ferment in the blood-vessels.

Professor BLUMENTHAL (Berlin) read a paper on Chemical Degeneration in Cancer Cells. He said that there were many differences between the chemical physiology of normal cells and cancer cells; the proportions of albumin and globulin were different; the action of gastric juice was not the same in these cells. These chemical differences might account for the destruction of normal cells by cancer cells and might lead to the cancerous cachexia and to the spread of cancer cells among, and into, the normal tissues.

Dr. BERGELL (Berlin) read a paper on the Chemistry of Malignant Tumours.

A series of interesting specimens of fish cancer and pigeon cancer was shown by Dr. LOEWENTHAL (Berlin), who considered these to be intermediate between tumours and an inflammatory condition.

Dr. CARL LEWIN (Berlin) related his Results of the Inoculation into Animals (Dogs) of Human Cancerous Tissue (Ovarian Cancers).

Dr. L. MICHAELIS (Berlin) reported on his experiments on: (*a*) immunisation of mice against cancer, and (*b*) transplantation of rat cancer. His results confirmed those of Ehrlich, though his chief aim, to make clear the nature of immunity, had not been realised.

Dr. LEDOUX-LEBARD (Paris), the author of "La Lutte contre le Cancer," in a short address appealed to all educated people for their coöperation in the study of cancer.

Professor GEORGE-MEYER (Berlin), the general secretary of

the Conference, to whose labours its success is greatly due, dwelt upon the necessity of special hospitals for cancer.

Short speeches by Professor VON LEYDEN and Professor CZERNY brought the proceedings to an end. The former dealt with the importance of this Conference and the vast amount of work which had been done and Professor Czerny stated that there was some reason to hope that a cure not only could, but would, be found. He appealed to the Governments of various nations to foster the work carried on by researchers and clinicians in the field of cancer, inasmuch as cancer, being an enemy to the human race, should meet with a combined effort to overcome it.

THE MARSEILLES CONGRESS OF HYGIENE.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

ACHIEVEMENT AND RESULTS OF THE GREAT DRAINAGE SCHEME FOR MARSEILLES.—ALCOHOL AND THE DIET OF SAILORS.—THE STRUGGLE AGAINST TUBERCULOSIS.—DOMESTIC SANITATION.

Marseilles, Oct. 15th.

THE National Congress of Hygiene held in connexion with the Marseilles Colonial Exhibition has just concluded its labours. As announced in THE LANCET of March 31st last this congress, though national, would welcome any foreign hygienist who might desire to attend. As a result the foreign contingent formed quite an important part of the congress. The Russian Government alone was officially represented by M. de Timonoff, director of the means of communication of the St. Petersburg district; but the Belgian Government sanctioned the presence, in his individual capacity, of the well-known hygienist, Dr. Voituron, who is inspector of the sanitary services at the Ministry of Agriculture of Belgium. Then several Swiss, Italian, and Belgian towns sent representatives and there were individual members from Brazil, Great Britain, Germany, and Spain. The congress met in the Palace of the Pharo which had been built for the Empress Eugénie, but the Napoleonic dynasty was swept away in 1870 before the structure was quite completed. The first occupants were cholera patients and now it has been converted into the Medical School of Marseilles and the surrounding gardens into a public park. From this vantage ground a beautiful view is obtained of the entrance into the old port and the new docks, the islands, the sea, and the coast-line of the Gulf of Lyons. The various sections met in the different lecture-rooms of the medical school and enjoyed every convenience for the accomplishment of their task. The opening and closing ceremonies, however, took place in the Hall of Festivals of the Colonial Exhibition. It would be impossible to follow in detail all the discussions of every congress of this description held throughout the continent of Europe. On the other hand, what concerns Marseilles is of more than local interest and it is of particular importance to the British public. Marseilles is not only "the door to the East," but it is the particular door through which a large portion of our traffic, especially our passenger traffic, passes on its way to Egypt and the East Indies. Then, again, it interests the British public because it is a natural halting-place for the many invalids and pleasure seekers who endeavour to escape the northern winter by visiting the French or Italian Riviera.

It so happens, as bearing upon the above considerations, that the present congress has served as a sort of apotheosis in honour of Monsieur M. A. Cartier, author of the great scheme for the draining of Marseilles. What this means will not be altogether unfamiliar to the readers of THE LANCET, for it may justly claim to have contributed to the success which the congress has celebrated. More than 30 years ago THE LANCET published scathing denunciations of the insanitary condition of Marseilles. Then during the cholera epidemics of 1884, 1885, 1892, and 1893 this veritable plague-spot was described with minute care and the authorities were urged not to lose a moment in carrying out a general drainage scheme. The death-rate in normal times was 32 per 1000 per annum and with the occasional exceptional prevalence of epidemic disease would exceed 40 per 1000. Filthy sewers drained into the stagnant waters of the old port causing a permanent stench. Some houses had metallic pails which retained the heavy soil and allowed the liquids to flow into the open street gutter. In other houses there were cesspools and no less than 13,000 houses divided up into numerous tenements had no closets of any description whatsoever. The inhabitants simply used vases and threw the contents from their windows out into the streets! Such was the condition of Marseilles a few years ago and the congress listened to a paper giving the details of how all this has been altered. When dealing with the cholera epidemic in 1893 I described M. Cartier's scheme and gave a map to illustrate the details. It has now been realised but with what infinite trouble and useless life-destroying delay. Financially the scheme liberated householders from the expense of dealing with their own cesspools but imposed an initial tax of 50 francs per metre of street surface or run and an annual sewer rate proportionate to the value of the property. In exchange for this guarantee the Société Marseillaise and the Trans-Atlantic Bank undertook to supply the capital and to carry out the works. The drainage scheme which was thus to be carried out had been rewarded with a silver medal at the Universal Exhibition of 1889. The Prefect of Marseilles opened a public inquiry as to its applicability in January, 1890; the municipality adopted the scheme in the following July and in December it received the approbation of the highest theoretical sanitary authority of France, the Comité Consultatif d'Hygiène Publique de France. It was not till June, 1891, that M. Constans, then Minister of the Interior, introduced a Bill sanctioning the project in the Chamber of Deputies. The Bill was passed in July, 1891, and M. Freycinet, then Prime Minister, accompanied by other members of the Government, laid the foundation-stone of the main sewer on Oct. 8th, 1891.

The condition of the subsoil proving different from what had been anticipated unexpected difficulties arose. These were aggravated by the opposition of many householders and political animosities further complicated matters. Nevertheless, the sewers were all completed by May, 1896. A complete system of masonry and of hardware sewers now drains 1400 hectares of building land. Courts and alleys, as well as the streets, have their sewers, and these are at least ten feet below the surface of the street. Their size is calculated for a population that may grow to 800,000. The difficulty, in fact the principal objection to the scheme as a whole, is the insufficient fall of some minor sewers but notably of the main collector. Therefore artificial means of cleansing and flushing had to be provided. But if the sewers are not in every case self-cleansing, sewers now exist and they are cleansed, and that, after all, is the chief necessity. The masonry sewers are 100,800 metres and the pipe sewers 97,300 metres in length. The main sewer, called *l'émissaire*, is 11,870 metres in length, of which 8420 metres are tunnelled under a mountain so as to secure an outfall into the deep sea on the other side of a promontory that protects the approaches to the port of Marseilles. This main collector cost £280,000. It can pour into the sea 16,000 litres of rain or sewage per second and there are also some storm overflows. Such, in a few words, is the immense task that has been accomplished. The result is just what THE LANCET, basing its opinion on the experience acquired in British towns, foresaw. It is such as has always been promised by sanitary reformers. The prevalence of small-pox does not seem to have been affected by the construction of the sewers. The report presented to the congress states:—

> The high rate of mortality which Dr. Mireur described as prevailing before the carrying out of the drainage scheme has diminished little by little. It is now only 22 per 1000 which is the average of normal years when there has been no small-pox epidemic. The death-rate fell to 21·84 per 1000 in 1904 and to 21·45 in 1905.

When it is borne in mind that the normal death-rate used to be 32 per 1000, this, indeed, may be described as a glorious result. Had the Marseilles Congress of Hygiene met simply and solely to celebrate this one fact it would have imparted to the world a useful object lesson.

Many other questions, however, were also discussed, though perhaps not so fruitfully. But if it is desirable to celebrate successes achieved it is also indispensable to pave the way for future endeavours. Thus much that was said was of a tentative nature, a sort of feeling the way towards achievements in many other directions. For instance, if Marseilles was praised for the realisation of its drainage scheme, it was sharply criticised for not completing its waterworks. An excursion was organised and many members of the congress went to visit the canal and reservoirs for bringing the waters of the Durance to Marseilles. These

great engineering works were initiated many years ago by the father of the general secretary of the congress, M. de Montricher, but they were never completed. Marseilles has an abundant supply of what was qualified by the congress as "second-class" water: it was, indeed, argued that in many cases and in many towns it would be necessary to have two classes of water: one for washing the streets, putting out fires, flushing drains, and various industrial purposes. This would be the second-class supply. The first-class supply would be reserved exclusively for drinking and culinary purposes. At Marseilles it is necessary to take a portion of the existing second-class supply and so to filter or to sterilise it as to render it a first-class water. When this is done we are promised that there will be fewer cases of infantile diarrhœa and enteric fever.

Of course, many discussions related to maritime questions and the port sanitary medical officer, Dr. Torel, took a prominent part in these debates, besides conducting the whole congress to visit the lazaretto and disinfecting station at Frioul. He explained that in the course of a year some 26,000 Syrians came to Marseilles as emigrants on their road to North or South America. They were very poor and dressed in so extraordinary a manner that it had been necessary to issue a police edict forbidding them to land unless they wore something approximating to European clothes. On shore they slept in extremely unhealthy places where the rent they paid only amounted to 2½*d.* per day. Attempts had been made to build special shelters for these people but these had failed. In 1884, during the war in Egypt, their numbers so increased that a camp was prepared for them but here they soon fell ill and many contracted small-pox. Who was to build a suitable place for these people? If the State took the matter in hand private speculators would complain. Dr. Torel proposed that in regard to the price charged for the journey, the company, which had well nigh monopolised this business, should add a hotel charge for the keep of these people while they were at Marseilles. Some old ship might be anchored at a convenient station and used as a hotel for this class of emigrants. Such a measure would save Marseilles from some risks and much trouble while preserving to the town the £320,000 derived annually from this flow of emigration.

Another very interesting paper was read by Dr. A. C. Tartarin on the Feeding of Sailors by some French Mercantile Companies. Giving figures in detail he showed that one-fifth of the calories obtained were derived from alcohol, either in the form of wine or rum. He estimated that half a litre of wine gave 267 calories. Then when the food was bad a cask of rum was placed within reach of the men and they were told not to touch it. Nevertheless, they helped themselves and nothing was said. On the other hand, the men, having taken the rum, could not make complaints as to the insufficiency of food. Thus they were still further dependent on alcohol. The firemen on the ships in question had a half litre of wine extra and a larger portion of rum, so that one-third of the calories were in their case derived from spirits and wine. What, asked Dr. Tartarin, would shipowners say if their engines were fed with equally bad or unsuitable coal. Officers were allowed a bottle of wine per meal and a litre of spirits per fortnight. In the case of passenger ships, however, the crews were much better fed because there always remained enough from the table of the passengers. Thus alcoholism was not prevalent among the crews of passenger ships but it was very general among the crews of cargo boats. Here a significant incident occurred. A young physician, practising at the principal hospital of Marseilles, said that he had often wondered how it happened that men who were constantly at sea, who had very responsible duties to perform needing great steadiness and sobriety, who, in fact, were by nature sober, trustworthy men, nevertheless presented symptoms of alcoholism. The details given as to the nature of their diet provided the explanation. These men did not get drunk but their constitutions were gradually undermined by taking more alcohol than the amount of food which they consumed justified.

A good deal also was said about disinfecting ships and killing rats. The principal difficulty mentioned at present is the dearness of the apparatus used, whether it be the French *appareil Marot* or the English Clayton system. An earnest wish was expressed for more competition among manufacturers so that the port sanitary authorities should be relieved from the necessity of paying monopoly prices. If several ships were simultaneously to require to be disinfected at Marseilles delay, in the present circumstances, would inevitably occur. One good point to note is that none of the shipowners have complained of any damage done to the cargoes by these methods of killing plague-bearing rats and fleas. But in all these questions of controlling the healthiness of the ship, as Dr. Reynès well pointed out, the ship surgeon must be absolutely independent of the owners of the ship.

In regard to sanitation on shore a somewhat futile debate took place on the question of tuberculosis. Near Marseilles a sanatorium has been built on the principles enunciated by Dr. Calmette. The drawings shown and the details given seemed most hopeful, when some marplot inquired how many patients the sanatorium could hold and how many cases there were supposed to be at Marseilles. Though no actual figures were given in reply it had to be admitted that the sanatorium was but a model, a type of what might, and should, be done. But when compared with the extent of the evil the relief was of very small account. Of greater importance is the work done by the anti-tuberculous dispensary which several members of the Congress visited. Here in less than three months more than 7000 consultations have been given and 592 families assisted, receiving, among other things, 13,775 kilogrammes of meal, 101,294 litres of milk, and 124,132 eggs. In 29 cases money has been paid so that the persons afflicted might remove to more healthy quarters. The evidence obtained at Marseilles confirms the general opinion that unhealthy dwellings are the principal cause of tuberculosis. This opinion added to the interest of the papers and debates relating to domestic hygiene. Thus, Commandant Hoc presented an illustrated report on the portable stoves now in use and he concluded that whenever an accident happened a scientific inquiry should be held by experts, as was done in the case of boiler explosions. M. Augustin Rey thought that the fundamental error was the employment of metal. At the St. Bernard monastery he had found a stove 300 years old but it was made of fireclay. This was also the case throughout Russia and no one had heard of people being poisoned by the fumes of stoves in Russia, but there clay alone was employed in their structure. M. Rey, who is an architect, also had a great deal to say about block building or flats. He was anxious to abolish internal courts which are never properly ventilated. Instead of a hollow in the centre of a square block he would build on the site of the central court and give the same amount of air space in the front and the back of the building. The plan instead of a square would appear like two T's, one under the other. The frontage of shops would be preserved but in the bays thus created there would be no apartments above them. Further, he thought that the windows ought to reach the ceiling of the rooms, as the best light came from the highest part of the window. The orientation and the light of the house should be so calculated that every room could receive for a few hours the direct rays of the sun. The window, he urged, is for light, not for air. The surfaces required for ventilation vary according to the methods employed and the condition of the temperature or the wind. They have nothing whatever to do with the question of light. The internal courts dated from the Middle Ages and had their sanction in the necessities of defence. To-day the only defence required was against the dangers of stagnant air. Therefore he was of opinion that if the court were put outside the dwelling the air would circulate freely with that of the street, the street would be rendered wider, and the sun's rays would more easily reach all parts of the dwelling.

The old dust-bin problem came in for its share of discussion and the necessity of shafts in houses built as flats was generally recognised, otherwise objectionable material would remain in the kitchen. Thereupon M. G. Tirlicien unfolded a paper parcel and showed some material that looked like cinders. He said it was both "hard and soft core" ground together in a machine. The crusher, in revolving with great rapidity, caused a strong draught to pass through and this helped to oxidise the materials, while the dry or hard core further helped to absorb and to purify the soft or moist core. As this was the first time such a process had been proposed the congress reserved its opinion, but on the other questions resolutions were passed in the sense indicated by the discussion.

Altogether medical men, civil engineers, architects, and the representatives of a number of French and foreign municipalities have spent a pleasant and instructive week together. Above all, they have seen that by the realisation of the general drainage scheme a great progress has been

achieved in Marseilles, though, from the sanitary point of view, this used to be one of the most hopeless towns in Europe.

To-day the members of the congress are making an excursion to Monaco and Nice where they will inspect various sanitary services. Last Wednesday M. Chanot, mayor of Marseilles, entertained the members of the congress at the town hall. At a banquet given on Friday the French Government was represented by M. Dabut, Director to the Ministry of the Interior, and M. Massier, Prefect of the Department. Dr. A. Gueirel, president of the Departmental or County Council of Hygiene, presided throughout the meeting of the congress.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Manchester Water-supply.

SEPTEMBER was a very dry month, and though the rainfall in October has so far been much greater it has only just kept pace with the demands on the Longdendale reservoirs and has not been sufficient to add to the storage. On Oct. 18th there was enough for 75 days' supply, the daily consumption being calculated on a basis of 38,000,000 gallons as the total daily consumption over the area of supply. At the same date last year there was sufficient for 132 days with a daily consumption of 36,000,000 gallons.

Southport Shrimps from Holland.

Southport shrimps have for many generations held their heads very high as belonging to the highest grade of crustacean aristocracy. In these degenerate days, however, the pressure of keen, if not fraudulent, commercialism has brought about a deplorable change. The demand for Southport shrimps continues, but the local supply is insufficient to satisfy it, so Dutch shrimps, well loaded with boric acid, are brought over to be converted into Southport shrimps. One of the local dealers sent consignments of shrimps to Bradford last week and in two samples taken 107 and 88 grains of boric acid were found. The solicitor for the defence was apologetic as to the boric acid, acknowledging that there was too much of it and he stated that in a similar case in Manchester which lasted six days, "it was tacitly agreed that the amount of boric acid which could be put in was 35 grains to the pound." He said that these were Dutch shrimps and that at present the Dutch industry was a large one and if they were imported they would need some preservative "owing to their delicacy." His Southport clients were "small people" who imported these Dutch shrimps and sold them just as they came as Southport shrimps. So that they were not too small to be guilty of a double fraud. The prosecution considered that the case showed the need for the dealers to obtain a warranty with such articles. Unfortunately it does. It is no doubt a fact that these petty and mischievous frauds as to foods are shamefully frequent and they will scarcely be checked by fines of £2 and £2 11*s.*, which the culprit paid in this instance.

To the Workhouse instead of the Hospital.

The deputy coroner of Manchester, Dr. W. Sellers, wrote to the Prestwich board of guardians about a week ago, with respect to the death of a woman who fell down stairs, was taken to the workhouse in an unconscious condition, and died from concussion of the brain. She was not seen by the medical officer until two and a half hours after admission and the jury recommended that a resident medical officer should be appointed at the workhouse to attend to urgent cases. It was held by the board that the workhouse was not intended for accident cases such as this. It is not easy to understand why the woman was not taken to the Ancoats Hospital or the Royal Infirmary, either of which was more convenient as well as more suitable than the workhouse. The accident, it seems, happened on Oct. 9th, and yet the case was not sent to the workhouse until the evening of the 10th, so that there was plenty of time to have considered the most suitable place for her reception. It was stated that when the new workhouse hospital was completed a resident medical officer would be appointed.

Oct. 23rd.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

A Difficulty under the Infectious Diseases (Notification) Act.

THE Local Government Board, having asked for a special report as to the proposal of the Dolgelly rural district council in North Wales to omit measles from compulsory notification, Dr. Hugh Jones, the medical officer of health, submitted a lengthy and detailed report in which he said that measles presented peculiar difficulties in the way of adopting preventive measures usually more or less successful in other infectious diseases. His experience of the district was that medical advice was not generally sought in mild forms of measles, so that the cases would still run the risk of escaping detection and he was afraid that complete notification was impossible. Isolation in the houses of the poor was naturally quite impracticable and, unfortunately, there was no hospital accommodation even for other diseases more amenable to isolation. Even in a rural district, where closure of schools might be expected to be of special value, great difficulty was experienced in keeping children apart. They met in one another's houses, in chapels, churches, Sunday schools, singing meetings, and public places. Dr. Jones was thanked for his report which was directed to be forwarded to the Local Government Board.

University College of South Wales and Monmouthshire.

At the annual meeting of the court of governors of the University College of South Wales and Monmouthshire, Principal Griffiths alluded to the increasing importance of the medical department of the College. The number of entries this year was 29. In the whole College there were 194 new students, compared with 178 last year.

Pollution of the River Avon at Bath.

Nearly all the sewage from the city of Bath and from the adjoining rural district is discharged untreated into the river Avon and although the corporation of Bath and the rural district council have frequently been asked to take steps to stop this pollution nothing of a practical nature has yet been done. Some ten years ago plans were considered for dealing with the city sewage, but the project was abandoned owing to the great cost that it would entail. The Somerset county council has now given definite notice of its intention to take legal proceedings under the Rivers Pollution Act against the sanitary authorities concerned.

Herefordshire County Council.

At the last meeting of the Herefordshire county council a letter was read from the Local Government Board requesting that the Board might be supplied with a copy of any abstracts of the reports of the district medical officers of health in the county which the council may have caused to be prepared. As a fact, the only abstract of these reports which has ever been made is contained in a report presented by the general purposes committee and which consists merely of a statement as to the birth-rates and death-rates recorded in the six urban and 11 rural districts in the county. The figures thus tabulated are of little value in ascertaining the true condition of the county as a whole from a public-health point of view. No information is given as to the prevalence or fatality of particular diseases.

Elementary Education and Medical Officers of Health.

At a meeting of the West of England and South Wales branch of the Incorporated Society of Medical Officers of Health held at Cardiff on Oct. 18th, Dr. J. D. Jenkins, the president of the branch, dealt with the question of elementary education from the point of view of the medical officer of health. He said that public health, as usually understood, was largely a branch of education in its widest sense, for the ordinary duties of a medical officer of health and his staff were in great part but a series of object lessons in the prevention of disease. Until quite recently very little importance appeared to be attached by the central education department to the physical welfare of the scholars, as evidenced by the want of prominence given to, or the total neglect of, subjects the teaching of which would tend to create in every child a wholesome respect for his personal well-being and would consequently foster the cultivation of habits inimical to the violation of the laws of health. He thought that the staff of the Board of Education might well be augmented by

the appointment of men who had undergone a medical training somewhat after the lines of the medical section of the Local Government Board. The first desideratum appeared to be the education of the central authority, education of the kind that will convince them of the wisdom of seeking the aid and advice of men with special knowledge and experience Dr. Jenkins referred to the sections dealing with public elementary schools in the Rhondda valleys contained in a recent Act of Parliament. The medical officer of health is empowered by this Act to require any scholar to be excluded from school attendance who is suffering from an infectious disease or who is likely to spread infection. Head teachers may also be required to furnish the medical officer of health with a list of the children attending school together with their addresses.

The Midwives Act in Cornwall.

A meeting of the committee appointed by the Cornwall county council under the Midwives Act was held at Truro on Oct. 18th under the presidency of Mr. J. M. Nicholls. The subjects of discussion included several complaints of uncertificated women acting as midwives. The committee decided that as it could not undertake a prosecution before 1910 the persons complained of should be cautioned against taking or using the name of midwife, or using any name implying that they were certified under the Act, or were qualified to practise that calling.

Oct. 22nd.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Appointments to the Staff of the Royal Infirmary, Edinburgh.

AT a meeting of managers of the Edinburgh Royal Infirmary held on Oct. 15th the following appointments were made to the honorary staff: Harry Rainy, M.D. Edin., F.R.C.P. Edin., was elected an assistant physician; John S. Fraser, M.B. Edin., F.R.C.S. Edin., was appointed an assistant surgeon in the ear and throat department; and R. Cranston Low, M.B. Edin., F.R.C.P. Edin., was appointed second assistant physician in the skin department. Dr. Rainy is a graduate of 1891 and is best known as joint author with Dr. R. Hutchison of "Clinical Methods."

Municipal Candidates and Consumption.

In connexion with the coming municipal elections in Glasgow the joint committee of the Federation of Friendly Societies of Glasgow, comprising 100 lodges and branches, and the Glasgow Trades Council, comprising 140 trade union bodies, and representing 40,000 citizens, has addressed the following question to all candidates for the town council:—

In view of the prevalence of phthisis in the city with its consequent mental and physical suffering and economic loss to individuals and their families afflicted thereby and in consideration of the now unanimous testimony of medical men that its propagation is not hereditary but contagious and that proper means being taken it can, according to the most eminent authorities such as Sir James Crichton Browne, Sir William Broadbent, and others, be completely stamped out in a few decades as leprosy has been, are you prepared, if elected to the town council to support energetically the movement for applying the powers of notification now possessed by the corporation and applied by them in the case of other diseases less malignant and less prevalent to phthisis?

Lunacy in Glasgow.

Mr. John Carswell, certifying physician in lunacy to Glasgow parish council, has just issued his annual report on the certification of lunatics and on the observation wards under his care. During the year there were certified 528 cases as against 583 the previous year and 544 the year before. Of the 528 cases certified, 164 had suffered from previous attacks of insanity; the remaining 364 represent the actual number of persons who became insane for the first time during the year. It is to be kept in view that the persons referred to in this connexion are those whose names are placed upon the register of pauper lunatics for the first time in each year. This is the nearest approach that can be got to the actual occurrence of insanity, but, of course, the insanity may have existed long before application is made for the assistance of the inspector of poor in the care and treatment of the patient in an asylum. The number of persons thus indicated represents the annual production of pauper lunacy. The proportion per 100,000 of the population who, in the sense indicated, became insane during the year was 58·7, which is 10·5 per 100,000 less than the previous year and is the lowest production rate since 1900. Reduced to a proportion per 10,000 it means that less than six persons per 10,000 of the population became pauper lunatics during 1905–06. When viewed in the mass the statistics of pauper lunacy look alarming, but a production rate of less than six per 10 000 in a large industrial population like Glasgow does not look alarming. When the figures are still further analysed the grounds for alarm are no stronger. At all ages below 60 years there has been no increased production of insanity during the last six years, and particularly at the ages 15 to 45 years (during which race decay, if it existed, would increasingly show itself as a factor in the production of insanity) there has been no increased production. The rate has also this satisfactory feature, that it shows very slight variation from year to year, which indicates that, whatever may be the causes of insanity in that period of life, they are not such as would be produced by gross and violent departures from ordinary habits of life. Mr. Carswell comes to the conclusion that although there are more patients under asylum care than formerly this does not justify the view that there is an increased prevalence of insanity. He also holds that the growth in the number of persons of unsound mind under official care has nearly reached its limit. In dealing with the observation wards in the Eastern District Hospital Mr. Carswell states that during the period since the opening of the wards on June 15th, 1904, till May 15th, 1906, the admissions numbered 1077. It is evident that the observation wards have fulfilled a useful function when we find that 50 per cent. of the cases reported as requiring care and treatment on account of mental unsoundness have been found suitable for probationary curative care in the observation wards; and of that number 61·5 per cent. were discharged recovered or improved, 6·7 per cent. died, and 28 per cent. were certified insane.

Oct. 23rd.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Corporation of Belfast and the Public Health.

AT a meeting of the public health committee of the corporation of Belfast, held on Oct. 18th, the new medical officer of health, Mr. H. W. Bailie, submitted his first report to the effect that 12 cases of typhoid fever, 45 of scarlet fever, and eight of diphtheria had been notified during the week. He also reported that six cases of typhus fever had occurred in the Ballymacarrett district, five of which had been notified as being typhoid fever. Dr. C. J. Clibborn (medical inspector, Local Government Board), who was present, said that medical men should not notify any case of infectious disease until they were thoroughly satisfied as to the nature of the illness. There being such a difference in the temperature and appearance of patients suffering from these two fevers, he could hardly understand how such a mistake occurred. Mr. Meyer (chief clerk) read a half-yearly return from one of the medical officers of health regarding the condition of his dispensary district, and pointed out the incompleteness of the replies to the queries as set forth. He also read the duties of the district medical officers of health as laid down by the Local Government Board in its sanitary Orders. Mr. Bailie said that he was making arrangements to hold a conference with the district medical officers of health at an early date, and he would bring under their notice the opinion of the committee relative to the discharge of the duties of their positions. This will raise the whole question of the exact position of the 14 dispensary medical officers of Belfast, all of whom are the local officers of health of their own districts, and of their relationship to the medical superintendent officer of health of Belfast. The dispensary medical officers are appointed not by the corporation of Belfast but by the board of guardians, and it is to the Registrar-General that they send their returns of births and deaths. The late medical officer of health (Dr. H. Whitaker) tried to make an arrangement by which they would give a copy of these death returns to him and they offered to do so on the payment of a small sum, but the corporation refused, and so the late medical officer of health used to put in his reports a paragraph of which two samples follow:—

I regret that I have not the information which would enable me to place before you the causes of death of the remaining 3700. (Belfast Health Report, 1904.)

I regret that I have not the information which would enable me to

place before you the causes of death of the other 4063 who died during the year. (Belfast Health Report, 1899.)

It will be interesting to watch what the issue will be now, the whole city being so roused about public health matters.

Rotunda Lying-in Hospital.

Extensive additions and alterations are now being made in the Rotunda Hospital and it is expected that they will be completed at a cost of about £10,000 in January next. A new wing has been built on the site of the old colonnade and patients' entrance on the west side of the existing building. On the ground floor a spacious entrance hall has been erected for the admission of patients to replace the old porch or lodge which proved inconvenient and unsuitable.

Royal Commission on Trinity College.

The Royal Commission dealing with Trinity College and the University of Dublin continues to hold its sittings for the examination of witnesses. At the meeting at Trinity College on Oct. 22nd Dr. Anthony Traill, LL.D., M.D., Provost of Trinity College, was again examined.

The Health of Belfast.

On Oct. 17th a large and influential deputation from the citizens' health committee of Belfast waited upon the Chief Secretary for Ireland, in Dublin Castle, with reference to the general health of Belfast. Among the members of the deputation were leading merchants of the city, representatives of the clerical, legal, and architectural professions, and the following medical men: Dr. W. Calwell (President of the Ulster Medical Society), Professor J. A. Lindsay, and Professor J. W. Byers. The discussion that took place was in private but at its conclusion a memorandum was drawn up stating what took place, and this was afterwards submitted to Mr. Bryce for his corrections. This memorandum constitutes an official report and has been given to the press. The public consequently know that Mr. Bryce heard with every sympathy the best scientific views on the lamentable position of Belfast in the matter of preventable disease, though he was unable to promise the Royal Commission of Inquiry for which the deputation asked. It was, he thought, possible that certain powers possessed by the Irish Local Government Board, but not yet exercised in connexion with Belfast, might meet the case. The Vice-President of the Local Government Board, Sir Henry Robinson, explained to the deputation the powers of his Board and it now remains to be seen whether the deputation and their backers, who are, as Mr. Bryce described them, both influential and representative, will persist in pressing the claim for a Royal Commission. The circumstances in Belfast may well ask for an extraordinary remedy.

Purdysburn Fever Hospital.

The medical men, nurses, and all those who were appointed to positions in connexion with the Purdysburn Fever Hospital, Belfast, are to take up their duties on Nov. 1st, and in the meantime the public health committee is to fix a suitable day to open the hospital for the reception of patients. At last this hospital—in the opinion of many the only real attempt made by the city corporation of Belfast to cope thoroughly with any public health question—is to be ready for patients. We may be thankful for the new institution, but we cannot but remember that it is many years since the Notification of Infectious Diseases Act was adopted, while there is hardly a town in England and Scotland of a similar size to Belfast which has not had a municipal fever hospital long since.

Belfast Medical School.

The inaugural address to the students of the Belfast Medical School was delivered at the Royal Victoria Hospital on Oct. 17th by Mr. J. A. Craig, assistant ophthalmic surgeon to the hospital, who took as his subject Medical Education. In the absence of the chairman of the staff Professor Lindsay presided and there was a large attendance of students and members of the teaching staff.

Cork District Lunatic Asylum.

At a meeting of the committee of management of the Cork District Asylum held on Oct. 16th a letter was read from the Lord Lieutenant stating that the casting vote given by the chairman of the meeting on Sept. 18th was illegal and that the election of Dr. J. P. Cashman as resident medical superintendent was therefore invalid. His Excellency also stated that he did not consider the salary of £500 increasing by annual increments to £700 sufficient considering the duties to be performed and requested the committee to consider the matter before it proceeds to another election.

Oct. 23rd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Radio-activity.

IT is announced that Madame Pierre Curie will lecture on Radio-activity in the amphitheatre at the Sorbonne every Monday afternoon beginning with Nov. 5th. At a meeting of the Academy of Sciences held on Oct. 8th M. Berthelot delivered an interesting discourse on the effect produced by radio-activity on the colour of precious stones. He had found that the amethyst, the topaz, the emerald (*fluorines*), the sapphire and the ruby (*corindons*) lost their colour under the influence of heat. Amethysts heated to 300° C. remained transparent but became colourless; the original colour was, however, regained under the influence of the radio-active emanations of radium exerted even through several thicknesses of glass. When acted on by radium glass assumed a violet tint which was lost on exposure to heat but returned even at some depth in the glass under the influence of radio-active emanations. A similar effect was produced by the x rays and even by solar light, but the latter acted much more slowly than the two former. The case was different with emeralds, which lost their colour when heated and did not recover it when exposed to the influence of radium. Rubies were very resistant, preserving their colour even when heated to bright redness. From these investigations M. Berthelot concluded that precious stones might have acquired their colour through the operation of the radio-active emanations which were so often met with in hot springs and in various soils. This might happen even if the precious stones lay at a considerable distance from the radio-active centre.

Urethroscopy in Chronic Urethritis.

At the Tenth Congress of the French Association of Urology M. Lebreton described the results of his experience based on about 200 cases. After having discussed the various lesions of obstinate chronic urethritis, such as soft infiltration, hard infiltration, glandular lesions, and papillomatous formations, he mentioned the methods of treatment which had given him the best results in each of these cases. With respect to urethroscopy, he said that in obstinate urethritis it was very helpful as a means of diagnosis, but it could not be regarded as therapeutically important. Only glandular lesions and papillomatous formations were capable of being really benefited by it.

The Determination of Chloroform in the Organs and Tissues.

At a meeting of the Academy of Medicine held on Oct. 9th M. Gréhant read a report on a communication made by M. Nicloux, who has discovered a very simple and accurate method of estimating chloroform and has used it in investigating certain phenomena of chloroform anæsthesia. For dogs the anæsthetic amount was a little above or below 50 milligrammes per 150 cubic centimetres of blood, while the corresponding fatal amount was a little above or below 70 milligrammes. The amount required for the production of anæsthesia was therefore not far removed from a fatal dose. Chloroform was rapidly eliminated from the blood but remained much longer in the tissues; the brain and especially the spinal bulb retained the largest proportions of it. In the blood it was taken up by the red corpuscles. Chloroform passed from the mother to the fœtus and made its appearance in the milk of animals which were suckling their young.

Oct. 22nd.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

The Medical Profession and the Public.

THE statute governing the profession of medicine contains a clause under which practitioners are bound to give medical advice or help when required and refusal is a contravention of the law. This clause has frequently been the cause of unpleasantness between the medical profession and the public, but such incidents have recently increased in number

on account of the development of organisation amongst medical men. Patients who habitually neglect to pay fees for medical attendance have in several instances been placed on an "index," whereby practitioners whom they consulted were forewarned that no remuneration was likely to be forthcoming. On the other hand, complaints have been made that some practitioners did not attend to calls at night, and in one instance a man claimed damages from his family medical attendant for "neglect" because the latter had not visited him when sent for at night. The action failed but a discussion in the newspapers ensued, with the result that legislation is being called for to remedy the present state of affairs. The Union of Medical Associations, a vigorous combination for the defence of medical interests, has formulated a list of grievances and drafted a Bill which will be brought before Parliament with a view to the reconsideration of the entire question on modern lines. A revision of the antiquated scale of fees for medical experts in lawsuits and questions of State medicine has already been obtained, with a favourable result for the medical men. The system under which medical practitioners are compelled to give advice and treatment ought to be abolished, being as it is an occupational anomaly. The relation of the profession to friendly societies, clubs, and contract practice will also be reconsidered, so that an era of activity is in prospect for medical circles.

Increase of Alcoholism amongst Women.

The report of the Lunacy Commissioner for Lower Austria discloses the remarkable fact that whilst alcoholism amongst the different classes of the male population shows no increase and is even tending to decline, the ratio of female inebriates under the observation of the Commissioner is slowly increasing. The diminution of inebriety amongst males may be due partly to the strict organisation of workmen's clubs and partly to the example set by many industrial and commercial firms which favour teetotalism or abstinence. The manufacture of alcoholic beverages is also on an increasing scale, and the facts may perhaps admit of the explanation that at the present time a comparatively small number of persons drink more than they did 10 or 15 years ago. Crimes and mental diseases due to alcohol are, however, not declining. The fact that female criminals and female lunatics are found more often than before may also be due to the drinking habits which prevail among certain sections of the working classes.

The late Professor Weinlechner.

A few days ago Professor Weinlechner, the surgeon who was several times called upon to attend His Majesty the Emperor, died suddenly whilst enjoying his favourite sport of hunting. He was formerly assistant to Professor Schuch, whom he eventually succeeded, and attracted considerable attention by his utter neglect of conventional forms of speaking. He was of humble origin, his father being a poor peasant but the boy being possessed of uncommon talent and perseverance attained the highest honours open to a medical student and when he became a man he was no less diligent. After the age of 70 years he retired from his post as director of the third surgical department in the general hospital, only to return to it as a daily visitor. His death came as a surprise to all, in spite of his 78 years.

Proposals for preventing the Repetition of Prescriptions.

The misuse of prescriptions by the public and the ease with which active drugs may be repeatedly obtained from the dispensing chemists have given rise to a movement amongst the profession to alter the rules regarding prescriptions. A committee of the Vienna Aerztekammer has made the following suggestions. In the first place, it is recommended that a prescription should bear the remark, "Ne repetatur post unum annum," or "post duo ..... tres annos," so that it cannot be repeated for an indefinite time. Furthermore, to prevent repeated use of dangerous drugs like morphine, cocaine, digitalis, and arsenic, the remark "ne repetatur" or "bis ..... ter repetatur" should be written plainly and be obligatory on the dispenser who will have to mark the date every time the prescription is dispensed. Certain remedies should be dispensed only for the medical man himself, and should bear the remark "ad usum proprium." The difficulties to be overcome are not insignificant, as the interests of the public, the pharmaceutical chemists, and the medical profession are not easily brought under one rule. With the appearance on the market of many modern medicines which are powerful drugs and at the same time very convenient and useful, the difficulties are increased because many of these drugs may be bought without a written prescription. A revision of the Poisons Act is therefore inevitable.

Rupture of the Stomach by Inflation.

A patient in one of the medical wards of the Vienna General Hospital has been the victim of a remarkable misadventure, the details of which leaked out in consequence of the action taken by the relatives. It seems that on account of the unsatisfactory material and financial position of the hospital staff an insufficient number of qualified medical men are retained for clinical work and the vacancies are filled by appointing "hospitants," or medical students, who are placed in charge of a few beds. In the clinic of Professor Pal a patient with suspected malignant disease of the stomach received the usual test breakfast and after one hour the contents of the stomach were to be examined. The assistant physician in charge of the ward went away on duty, directing his "hospitant," who said that he had done such operations several times, to empty the stomach of the patient by means of an aspirating pump. The patient, who was rather nervous, complained of increasing pain and suddenly screamed out that she felt something give way in her inside. Collapse followed and when the physician returned a rupture of the stomach was recognised. Immediate operation failed to save the life of the patient. It came out that the air chamber had been connected the wrong way, so that instead of the stomach being emptied of its contents air was forced into it until its weakened walls burst at the margin of a flat carcinoma. Such cases are very rare, only a few being on record. The case was adjourned by the judge in order to call several witnesses to give evidence as to who was responsible for the incidents in the wards. The assistant physician in his defence pleaded the practice of employing "hospitants" for such minor operations; the hospital directors asserted that only medical men of at least the position of assistant might operate on patients; while the director of the wards held the insufficient number of the staff at his disposal to be the main cause of the accident, as the juniors were overburdened with administrative duties.

Oct. 22nd.

EGYPT.

(FROM OUR OWN CORRESPONDENT.)

Bilharziasis.

As his contribution to the "Studies in Pathology," written by *alumni* to celebrate the quatercentenary of the University of Aberdeen, Professor W. St.C. Symmers (now of Belfast) has published a remarkable case of bilharziasis discovered at one of his necropsies in Cairo two years ago. The patient was an Egyptian man, about 30 years of age; numerous bilharzia worms were present in the portal vein, and the liver proved to be a typical specimen of advanced bilharzial cirrhosis, a condition already well described by Professor Symmers. The cut section of the liver showed an enormous white periportal cirrhosis, contrasting sharply with the drab colour of the rest of the liver, while microscopically the eggs of the worm were abundantly distributed. The bladder showed only incipient changes, slight roughness and the well-known sandy patches of the mucous membrane. The pancreas appeared normal to the eye, but the microscope revealed a slight amount of cirrhosis and numerous eggs in the cirrhotic bands and also in the glandular tissue. Like other observers he noticed that the eggs in this organ were mostly broken and partly destroyed. Eggs were also found in the mesenteric glands, but the intestinal canal furnished the chief interest of the case. There were present (1) a growth of bilharzial fibromata of the intestinal wall; (2) a bilharzial fibrosis of the appendix; (3) an extreme bilharzial polyposis of the large bowel; and (4) a few bilharzial papillomata in the lower part of the ileum. Many young male worms were found lying in the submucosa of the bowel. The case is well illustrated, especially one part of the descending colon, which showed numerous large polypoid growths and fibrous thickening of the serous coat. It has always been considered remarkable that the schistosomum hæmatobium worm should be confined geographically to Africa, but during the last two years in many widely distant parts of China, in Japan, and in the Philippine Islands a sister parasite, schistosomum Japonicum, has been found by many observers. Curiously

enough, the eggs of this new parasite have not yet been found in the urinary passages, though there are lesions in the rectum, appendix, mesenteric glands, gall-bladder, pancreas, and liver. This worm, in Japan at least, is found to infect cats as well as men. Mr. Montgomery, a veterinary officer in India, has lately added to our knowledge by reporting the discovery of yet another parasite, which he calls schistosomum Indicum, so far found in the alimentary canal of donkeys, horses, oxen, and, most commonly, in sheep.

Helouan Baths.

Dr. H. Overton Hobson has just published a little book based on his experience of five winters at this health resort. He describes in detail the special Helouan bath, which is similar in principle to the Aix douche massage. In the case of the latter there are two gentle streams of water issuing from pipes which are manipulated by two attendants, who at the same time give massage to the patient. In the Helouan bath the whole body is kept under water regulated to the temperature ordered by the physician; the two masseurs having no hose-pipes to manipulate are free to devote all their attention to rubbing the patient. The sulphuro-saline water, stronger than any in Europe, is allowed to run through the bath continually and is never diluted by mixing with ordinary hot water. The bath establishment was opened seven years ago, and from the cripple's point of view has the great advantage of having no steps. There was a time when Helouan was peaceful to the extent of dulness. But thanks to Dr. W. Page May there is now an excellent golf course on the sands, which provides amusement for the British and the Americans, and two or three times a year there are race meetings, to say nothing of riding, dances, and lawn-tennis parties.

Société Khédiviale de Médecine.

This medical society began very modestly in Cairo a few years ago and has now published its first volume of transactions. Unfortunately, the discussions are usually in French, which debars many English practitioners from taking much interest in the society. Among the curiosities of the last year I may mention a case of syphilis with chancre in one tonsil, producing painful dysphagia. This symptom disappeared after five mercurial injections administered by Dr. Joannovich. Dr. Pfister showed a woman with a hydatid tumour of the parotid gland, which must be a very rare site in any country.

The Wakfs Charities.

This department of Mussulman Ecclesiastical Commissioners is richer and more generous than it used to be before the Government helped them to control their finances. They now have an annual hospital budget of £8000 and employ 14 native doctors. At El Azhar University in Cairo they have established a small hospital of 20 beds, much wanted for the thousands of students, many of whom look wretchedly pale and ill. At each of the out-patient dispensaries in Boulac, Old Cairo, and Menshia quarters about 100 patients are seen every day except Friday, while at the Kalaoun Mosque some 500 eye patients attend daily. In Alexandria and Tanta out-patient dispensaries have also been started. Men, women, and children are prescribed for gratuitously, and naturally most of them are Mahomedans, but Jews and Christians are welcomed if they care to attend. The Wakfs also supply a doctor and a druggist to attend the poor during the pilgrimage to Mecca, in addition to the doctor supplied for the various officials of the pilgrimage.

Church Missionary Society's Hospital.

This hospital in Old Cairo continues to do useful work. There are now 100 beds, besides two shelters for 40 patients suffering from ankylostomiasis, who sleep for a day or two at a time on trestle bedsteads during their treatment. Three women nurse probationers are being trained in the wards, a Syrian, a Soudanese, and an Egyptian. The new operating theatre is well furnished, its walls have all corners rounded and are painted with several coats of enamel paint, and it is well provided with light by means of a huge plate-glass window. Some thousand operations for trichiasis are performed during the year and almost a similar number of other operations, many of which are for tuberculous glands, necrosis, hernia, vesical calculi, &c. The number of patients suffering from ankylostomiasis treated during the year is about 1300.

Oct. 15th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

The Consumption of Alcohol and Tobacco in Canada.

THE official year of the Canadian Government ends on June 30th. For the 12 months immediately preceding that date of the present year the *per capita* consumption of alcoholic liquors and tobacco in Canada was as follows: spirits (gallons), 0·927; beer, 15·660; wine, 0·698; and tobacco (pounds), 2·991. The consumption of spirits showed a decrease, whilst there was an increase in beer, wine, and tobacco.

Toronto and McGill Medical Schools.

The medical department of McGill University, Montreal, opened for the session 1906-07 about the middle of September, with an increased attendance, bringing the total number up to about 400. Dr. R. F. Ruttan, professor of chemistry in that institution, delivered the opening lecture. He made historical references to the founding of the medical school in Montreal and stated that the present was the seventy-fifth session. He then proceeded to advocate an extension to a five-year course and an arts degree, special study in the scientific branches related to medicine to be taken during the pre-matriculation education. At Toronto the opening ceremonies took place somewhat later—namely, on the evening of Oct. 3rd. The freshman class numbers 179, which will place the total attendance in the neighbourhood of 700. Sir Almroth E. Wright of St. Mary's Hospital, London, England, delivered the opening lecture, his subject being "Inoculation with Bacterial Vaccines."

Medical Inspection of Schools in Montreal.

The Montreal city council has recently appointed 40 medical men to act as medical school inspectors in that city. Inspection will be given a trial of three months, when, if it proves satisfactory, it will become a permanent institution. That inspection is needed in the city may be inferred from the report of one of the inspectors. Most of the reports show overcrowding and a bad condition of affairs as regards diseased children. The report of the inspector referred to states that 33 pupils out of a class of 66 were attacked by measles as the result of one pupil suffering from the disease attending that class; 15 per cent. of pupils at one school were found to be suffering from defective eyesight; 40 pupils were crowded into one class-room where the cubic contents of air barely sufficed for 15; and large numbers of pupils were found showing signs of tuberculosis and insufficient nutrition.

Death of Dr. James Stewart of Montreal.

Dr. James Stewart, professor of medicine in McGill University and senior physician to the Royal Victoria Hospital, Montreal, died at his home in that city on the evening of Oct. 6th. The cause of death was apoplexy, the onset having occurred one evening directly after dinner about nine days ago. The late Dr. Stewart was born in Ontario in 1846. He pursued his medical studies at McGill University, from which institution he graduated in 1869 when 23 years of age. He continued his medical studies at Edinburgh, London, Vienna, and Berlin, and was admitted L.R.C.P. and L.R.C.S. Edin. in 1883. He practised for a few years in his native province, moving thence to Montreal, where from 1883 to 1891 he was professor of materia medica and therapeutics at McGill University. Since 1891 he has held the chair of medicine and of clinical medicine. In 1903 he was President of the American Association of Physicians. He was a member of the British Medical Association and was a vice-president of the Section on Medicine during both the Montreal and the Toronto meetings. He was also a prominent member of the Canadian Medical Association, of which he was at one time general secretary.

New Health Board for Ontario.

Speculation has been rife in the medical profession in the province of Ontario owing to the fact that the Government in reorganising the Provincial Board of Health contemplated taking a step in advance and creating a new department, to be under a responsible Minister of the Crown, and to be called the Department of Public Health. But those who would gladly have heralded such a step have been disappointed owing to the fact that the Government has just perpetuated the old order of things with an entirely new

board with the exception of the secretary, Dr. Charles A Hodgetts, who will continue to act in that capacity. The present board is as follows, and the members are mostly trained in matters relating to public health and sanitation: Dr. Charles Sheard, medical health officer of Toronto and professor of infectious and contagious diseases in the University of Toronto; Dr. Milton Ira Beeman, Newburgh, Ontario, who has been township health officer for a number of years in his district; Dr. J. W. S. McCullough, Alliston; Dr Charles R. Coughlin, Peterborough; and Dr. William J. Robinson and Dr. William R. Hall, Chatham, the two last having been health officers for a number of years.

Montreal General Hospital.

The Montreal General Hospital is erecting a new wing at a cost of $15,000. Recently 18,000 square feet of land were purchased for the purpose, and it is intended that the new wing shall contain the lighting, heating, and laundry plants. In addition extra accommodation will be provided for about 20 more nurses. During the quarter ending June 30th there were treated in the hospital 881 patients and there were 59 deaths, but as 28 of these died within three days of their admission the ordinary hospital death-rate for the quarter was 3·5 per cent. In the outdoor departments there were 10,893 consultations.

Analysis of Canned Meat.

The recent developments with regard to certain United States packing-houses made it incumbent on the laboratory of the Canadian Government at Ottawa to make a detailed analysis of certain of these products. This was recently done and the report of the chief analyst deals with the subject. A collection of canned meats as they are offered for sale in the Dominion of Canada was made last June and the collection made all over Canada included goods packed in Canada as well as goods put up by manufacturers in the United States. In all 322 samples were collected and their examination was proceeded with. Inspection was made on opening the tins as to whether the meats appeared to be fresh and destitute of any disagreeable odour and they were further tested as to whether there were any preservatives used in packing them. Only four samples out of the total were found to give evidence of decomposition—that is, 1·4 per cent. The preservatives sought for were salicylic, benzoic, sulphurous, and boric acids, but only the last named was detected and then only in a very small number of samples and in quantity not exceeding the limit fixed by the English Parliamentary Commission of 0·5 per cent. The chief analyst agrees with the State Board of Health of Massachusetts that in general the results are favourable to the manufacturers both in the west and in the east.

Typhoid Fever in the Toronto General Hospital.

In the annual report of the Toronto General Hospital for the year ending Sept. 30th, 1905, which has only just been sent out, there is a report of 110 cases of typhoid fever, which was compiled by the senior resident physician, Dr. E. C. Burson. The report embraces all the cases of typhoid fever admitted into the Toronto General Hospital from Jan. 1st to Dec. 31st, 1905. 30 per cent. of the cases were admitted from the city of Toronto, whilst the remainder came from outside points. By months the admissions were as follows: January, 2; February, none; March, 2; April, 4; May, 2; June, none; July, 2; August, 19; September, 26; October, 20; November, 14; and December, 9. 68 per cent. of the cases were admitted during the months of August, September, and October. The average duration of stay in the hospital was 31 days; the shortest was 12 days and the longest 91 days. 82 cases were males and 28 were females. 21 of the cases were from ten to 20 years of age; 51 cases were between 20 and 30; 24 cases between 30 and 40; 11 cases between 40 and 50; and 3 cases between 50 and 60. Rose spots were noted in 81 cases. The spleen was enlarged in 60 cases. The Widal reaction was positive in 76 per cent. of all cases tested before the seventh day of admission. In one case it developed for the first time on the fifteenth day and in another on the twenty-fourth day after admission. The diazo reaction was present in 52 per cent. of this series. Of the 110 patients nine died, a percentage of 8·2. Perforation of the bowel occurred in two cases; in both laparotomy was performed; both died. In one of these cases purgatives had been administered during the first eight days, death taking place on the sixteenth day; in the other for two days, death taking place eight days later. Dr. Burson presents these conclusions: 1. That typhoid fever is essentially an autumnal fever. Young persons and adolescents seem especially liable to the disease, and robust and well-developed individuals, in general, more so than the weak and those debilitated by disease. 2. As a rule, it starts insidiously with a general feeling of malaise, pains throughout the body, and loss of appetite. A distinct rigor is very rare, but chilly sensations at the onset are common. 3. The most important and constant guides for a diagnosis are the fever, rash, enlarged spleen, and Widal reaction. 4. Probably no one of the acute affections is so prolific in complications as typhoid fever. Of these, pneumonia, hæmorrhage from the bowels, and perforations are the most serious.

Toronto, Oct. 13th.

NEW ZEALAND.

(FROM OUR OWN CORRESPONDENT.)

The Adoption of Children Act.

THERE is now under discussion in the House of Representatives an amendment to the Adoption of Children Act. The suggested alteration, despoiled of legal phraseology, provides that it shall be illegal for anyone to accept money either at the time of adoption or later. The effect of this is, as the Minister of Justice explained, to do away with any monetary incentive to adopt children. In the course of the argument it was disclosed that a considerable number of "pakeha," or white children, are yearly adopted by Maori women. It was not suggested that the natives were unkind to their children by adoption but it was suggested that white children would be better under the care of the State than confided to the care of the natives. There can be no doubt as to the desirability of the proposed new law.

Overstudy.

Dr. King, medical officer to one of the principal mental asylums, has been conducting a very energetic campaign against overstudy in our secondary and higher schools. His views have been combated fiercely by some of the leading educationists. He pleads most earnestly for more play-time, adequate playgrounds, and less cram. There is no doubt that the strain is greater at the age of puberty, especially amongst girls, than it should be. The difficulty, however, will never be solved until some better way of inciting children to serious study can be found than competitive examination. In connexion with this matter the chief health officer (Dr. J. M. Mason) has, with the concurrence of the Minister of Public Health, suggested a scheme for the medical inspection of school children. At present, except in the high schools and colleges, no medical inspection takes place. He has suggested that an inspector should be appointed for each health district whose duty it will be to examine all children submitted to him by the teachers. The various district health officers will address the teachers in each large centre, pointing out to them how best they can recognise such ailments as eye strain, long sight, short sight, adenoids, deafness, imperfect teeth, and so on. The master will be required to keep a list of all scholars who, in his opinion, are below par in any physical sense. This list will be sent to the medical inspector who will examine the suspected ones and advise the parents as to what should be done. There are at present attending our board schools some 127,000 children, and to try to make a complete examination of them all would, because of the dispersion of our population, involve a very great expenditure. The education boards and the teachers have warmly approved the scheme which it is to be hoped will be in full working order before long. The appointment of five new officers will be necessary. It is proposed that they shall receive a salary of about £500 per annum each, half to be paid by the education boards and half by the health department.

Old-age Pensions.

The result of increasing the annual payment to the respectable worn-out citizens from £18 to £26 per annum has been, it would appear, an increased number of applicants last year. There were 11,770 persons in receipt of old-age pensions and the total sum expended was £199,081. This year 12,582 persons appear on the list at an average cost per head of £24 17*s*. This gives a total expenditure of £313,018.

Crusade against Quackery.

In 1904 a regulation was brought in requiring that all

"patent medicines" should have their formulæ clearly set out in English upon the label. Because of the mistake in drafting the Health Act it was found impossible to include what the legislature really meant—secret and proprietory medicines. Coupled with this legal disability is the active opposition of some of the leading advertisers of quack remedies. In consequence of the publication of the analyses of several of the most widely advertised "patent medicines" on the market here and the deliverance of lectures by the chief health officer the attitude of the newspapers has completely changed. The Minister for Health has agreed to enlarge the phrase "patent medicines" to include all secret and proprietary remedies. When this has been done there will be no difficulty in putting a check upon the operations of the vast hordes which gull and live upon the ignorance of the medicine-imbibing public. Special attention was given to the electric belt rejuvenator and as a result the representative of the notorious "Dr." Maclaughlin has left the colony. It is rumoured that his departure was so timed that one crate of "electric" belts and several bales of literature pertaining thereto were cremated the other day at the city destructor. All the leading newspapers have joined in the campaign and when the "soulless business manager," as the chief health officer described the man behind the gun, has been overcome the whole swindle will fall to pieces. A private member has given notice of a Bill which if passed will prevent newspapers from publishing the advertisements of any seller of a "patent medicine" which has not obtained the permit of the health department.

Fires on Wool Ships.

Owing to the fires which have taken place on board several of the ships carrying wool from New Zealand a Royal Commission was set up to inquire into the cause or causes. The Commissioners, after calling a great number of woolsorters, exporters, and shippers, have decided to call expert evidence to help them in the solution of the question. With the consent of the Government Dr. Mason, Dr. Maclaurin, colonial analyst, Mr. Aston, chemist to the Agricultural Department, and Mr. Gilruth have been asked to conduct any scientific experiments they may think fit which will help to further the objects of the Commission.

Water-supply.

A series of very important examinations has just been completed by Dr. R. H. Makgill, bacteriologist to the health department, upon the water-supplies of the chief cities in the colony. In no instance did he find evidence of bacterial contamination, although in some cases he has seen fit to advise that the water should be filtered in order to exclude vegetable impurities.

Workmen's Dwellings.

The first of these State experiments has nearly been completed. The object of the Government is to provide sanitary, comfortable, and artistic homes for working people at a fair rent. Several architects of eminence have been called in and they have been allowed free scope for displaying their individuality. The result is that all semblance of "model dwellings" is absent from the village. They consist of four rooms, five rooms, and six rooms exclusive of offices and outbuildings. The applicant for any of these cottages must satisfy the land board that he is a *bonâ-fide* worker and that he is not the owner directly or indirectly of any land in New Zealand. Where there are more applicants than houses the board shall determine by ballot. The tenant has to keep the place in good repair. The average rent will be about £2 5*s.* per month. The conditions for acquiring the freehold are as follows:—

Mode A.—By payment in cash of the capital value of the dwelling (including the land) at any time not less than twenty-five years from the date of the lease. Rent during term of lease to be at the rate of 5 per cent. on the capital value.

Mode B.—(*a*) By monthly payments over a period of thirty-two years, at the rate of 8 per cent. per annum on the capital value.

(*b*) By monthly payments over a period of forty-one years, at the rate of 6½ per cent. per annum on the capital value.

Mode C.—By monthly payments of rent at the rate of 5 per cent. per annum on the capital value of the dwelling, and taking out an insurance policy on the life of the applicant with the Government Insurance Commissioner for the amount of the capital value of the dwelling.

Attached to each house is a small garden. Settlements have been purchased by the Government near Auckland, Wellington, Christchurch, and Dunedin.

Hospital Abuse.

The Inspector-General of Hospitals (Dr. D. Macgregor) in his last report to Parliament draws attention to the misuse of some of the hospitals in the colony:—

The chief difficulty that has arisen in connexion with the hospitals of the colony is the deliberate and determined attempt which has been made by the trustees of Northern Wairoa Hospital to evade the law by abusing the ticket system. This I long ago failed to check, notably in the old Province of Westland. In the above district this has been pushed to the length of absurdity. Any person who pays £1 6*s.* is there entitled to the benefit of free medicines and attendance at his own house by the doctor for himself and his wife and children. If this benefit contributor, or any of his family, become an inmate of the hospital, he receives all the benefits thereof for 15*s.* a week. This means that the hospital is turned illegitimately into a benefit club for the neighbourhood—quite an intolerable state of things, demanding clear legislation on this and other points set forth in last year's Hospitals Bill. In other places this evil example is finding some imitators, and it must be checked.

This Northern Wairoa Hospital has been the cause of many complaints and much deliberation on the part of the various medical societies. It is to be hoped that the new Minister of Public Health will do something to mitigate this undoubted injustice to the ratepayers and the profession. Dr. Macgregor again points out the necessity for greater powers being given to the central authorities with respect to the spending of money. The hospitals here are maintained by rates, voluntary contributions, bequests, and the consolidated fund. The returns of 25 of the principal hospitals show:—

	Per cent.
Government	51·0
Rates	33·1
Voluntary contributions	14·5
Bequests	1·4

Does this not, as he comments, form an eloquent argument for greater State control?

Sept. 2nd.

Obituary.

HENRY WALTER SYERS, M.D. CANTAB., M.R.C.P. LOND.

Dr. Henry Walter Syers died on Oct. 10th in very sad circumstances. On Oct. 1st he sustained a poisoned wound of one of his fingers, probably while making a necropsy, and the resulting infection proved fatal in spite of all the care and attention of several medical friends. Dr. Syers was born at Kenilworth, Warwickshire, in October, 1852. In due course he entered at Gonville and Caius College, Cambridge, and graduated as B.A. (Natural Science Tripos) in 1875. His medical studies were pursued first in Birmingham and afterwards at the Westminster Hospital and in 1883 he both graduated as M.D. at Cambridge and was admitted a Member of the Royal College of Physicians of London. From 1885 to 1887 he was medical registrar and tutor at the Westminster Hospital, where his clinical teaching was so greatly appreciated by the students that they presented him with a testimonial. He was appointed on the staff of the Great Northern Central Hospital in 1888, shortly after the transference of the institution to Holloway. The hospital at that time contained only 64 beds, but the out-patient department was a large one, and for the next 17 years he laboured in that ever-increasing field. No vacancy occurred upon the senior staff until a year ago, when to his great satisfaction he became one of the physicians in charge of beds. He was not only most assiduous in his clinical work but in order to keep himself abreast of modern pathology he was much in the post-mortem room and his enthusiasm in this respect must be held to be the immediate cause of his untimely death.

Dr. Syers was an excellent linguist, knowing much Greek, Latin, French, Italian, German, Portuguese, and Spanish. He translated J. R. Morat's "Physiology of the Nervous System" and Laumonier's "New Methods of Treatment," which appeared in 1904. He also published in 1901 a treatise on the "Theory and Practice of Medicine" and was the author of many contributions to various medical journals. Some years ago he made a special study of spectroscopy in relation to medicine. In 1905 he was president of the North London Medico-Chirurgical Society and was re-elected this year. Archæology (especially Egyptology) was a favourite subject with him, and much of his leisure was spent in studying Egyptian languages, such as demotic, Coptic, and hieroglyphics. A skilled pianist, he did not admire Wagner but delighted in Mozart, Beethoven, Handel, and Chopin. His personal disposition

was that of an upright and honest man who spoke freely of what was in his mind. Dr. Syers was never married.

FREDERICK HURST CRADDOCK, M.R.C.S. ENG., L.S.A.

Mr. Frederick Hurst Craddock, medical superintendent of the Gloucestershire County Lunatic Asylums, Wotton and Barnwood, near Gloucester, was found dead in his bedroom on the morning of Oct. 14th, the cause of death being heart failure. He had not been feeling very well since the abnormal heat in July, and during his holidays, about a month ago, he had a serious cardiac attack on the river bank while angling in Monmouthshire. Mr. Craddock, who was 55 years of age, was a native of Nuneaton. He was formerly a scholar of Lincoln College, Oxford, and graduated as B.A. and M.A. in 1873 and 1893 respectively. Choosing medicine as a profession he entered as a student at St. Bartholomew's Hospital and became a Member of the Royal College of Surgeons of England and Licentiate of the Society of Apothecaries in 1877. For some time he was clinical assistant at St. Luke's Hospital and was subsequently appointed senior assistant medical officer and deputy medical superintendent of the Worcestershire County Asylum, a position which he held for several years. In the summer of 1882 he was appointed medical superintendent of the Gloucestershire County Asylum. By his death the county council has lost an able asylum administrator, the patients a skilful and genial medical officer, and the staff a considerate chief, and it is no mere figure of speech to say that the news of his sudden demise was received throughout the county with very great and real regret.

The funeral took place on Oct. 19th at Nuneaton; a memorial service was held at the asylum chapel on the previous day.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held in October the following candidates passed in the subjects indicated:—

Surgery.—L. C. W. Brigstocke (Section II.), Oxford and St. George's Hospital; C. F. W. Dunn, Middlesex Hospital; E. L. D. Gay (Section II.), Lausanne; and R. Spears (Sections I. and II.), University College Hospital.

Medicine.—C. C. Morrell (Section II.) and G. H. Rodolph (Sections I. and II.), London Hospital; G. M. Seagrove (Section II.), St. Bartholomew's Hospital; F. A. K. Stuart (Sections I. and II.), Cambridge and St. Mary's Hospital; and A. R. Wade (Section I.), St. Bartholomew's Hospital.

Forensic Medicine.—E. J. Crew, Guy's Hospital; and G. M. Seagrove, St. Bartholomew's Hospital.

Midwifery.—J. Jones, Manchester; and B. S. Matthews, Royal Free Hospital.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—C. F. W. Dunn, E. L. D. Gay, and G. M. Seagrove.

FOREIGN UNIVERSITY INTELLIGENCE.—*Budapest:* Dr. Franz Tangi has been appointed to the chair of General Pathology. Dr. Preisz has been appointed Professor of Bacteriology.—*Cracow:* Dr. Leo Marchlewski has been appointed Professor of Medical Chemistry.—*Florence:* Dr. Emilio Santi has been recognised as *privat-docent* of Midwifery and Gynæcology.—*Halle:* Dr. Arthur Schulz has been appointed Extraordinary Professor of Forensic Medicine.—*Lemberg:* Dr. Josef Nussbaum has been appointed to the chair of Zoology and Comparative Anatomy.—*Pavia:* Dr. Torquato Legnani of Modena has been recognised as *privat-docent* of Operative Medicine.—*Prague (German University):* Dr. Kretz of Vienna has declined the Professorship of Pathological Anatomy, vacated by Dr. Chiari. Dr. Gustav Doberauer has been recognised as *privat-docent* of Surgery.—*Rome:* Dr. Ugo Cerletti has been recognised as *privat-docent* of Mental Diseases.

UNIVERSITY OF CAMBRIDGE.—From returns supplied by the tutors it appears that the number of freshmen intending to study medicine who have entered the University this term is 122. Last year the number was 117 and the year before 89.—The Gedge prize has been awarded to Mr. P. P. Laidlaw, B.A., of St. John's College, for a memoir entitled "Some Observations on Blood Pigments."—Mr. J. J. Lister, F.R.S., of St. John's College, has been appointed an elector to the chair of zoology and comparative anatomy, in the place of the late Professor Weldon.—Dr. W. E. Dixon and Professor Stockman have been appointed examiners in pharmacology, and Mr. T. S. P. Strangeways and Professor Ritchie examiners in general pathology for the third M.B. examination.—Dr. W. N. Shaw, F.R.S., director of the Meteorological Office, has been elected an honorary Fellow of Emmanuel College.

UNIVERSITY OF LONDON.—PUBLICATION OF EXAMINATION PAPERS.—In and after September, 1906, examination papers will be published by the University as soon as possible after the several examinations. The papers for all the examinations of the session in agriculture and veterinary science will be published annually in August. Applications for examination papers should be addressed to the Financial Secretary, University of London, South Kensington, S.W.

LITERARY INTELLIGENCE.—A new edition of Professor W. Osler's delightful volume of essays, "Æquanimitas," has been issued by Mr. H. K. Lewis. This edition contains the three valedictory addresses which Professor Osler delivered before leaving America. One of these is the famous address entitled "The Fixed Period," in which Professor Osler's jesting allusion to a proposal that men over 60 years of age should be painlessly removed was taken *au grand sérieux* by the majority of the lay press and solemnly commented upon.—The Arabic translation of Galen's Ἀνατομικῶν Ἐγχειρήσεων βιβλίον has recently been edited by Herr M. Simon from a very early ninth century manuscript, under the title of "Galen, Sieben Bücher Anatomie: Vol. I., Arabischer Text. Einleitung zum Sprachgebrauch. Glossar. Vol. II., Deutscher Text. Kommentar. Einleitung zur Anatomie des Galen. Sach- und Namen-register."

PLAGUE AT CHINDE.—Mr. Hewitt-Fletcher, H.M. Vice-Consul at Chinde, writes in an official report: "The bubonic plague appeared here towards the end of September, 1905, and lasted until November. The Portuguese authorities took energetic steps to restrict the area affected and they burned and rebuilt elsewhere some 300 native houses, besides erecting a camp where 500 natives were kept under observation (they having been exposed to infection). They also put up three buildings for the accommodation respectively of suspected cases, those actually suffering from plague, and those convalescent. The two or three European cases were treated in the European hospital and only one death occurred. The medical authorities thoroughly disinfected all cargo leaving Chinde for up river; the cargo for oversea was disinfected at Beira before leaving the lighters in which it was conveyed from Chinde to that port. The disinfectant employed for fumigating cargo was sulphur and for baggage formalin. Haffkine's serum and Yersin's serum were freely employed as a prophylactic and as a remedy; the former gave the more satisfactory results."

UNIVERSITY OF OXFORD.—In a Convocation held on Oct. 9th, the senior proctor communicated to the House a letter from the Right Honourable the Chancellor, Viscount Goschen, nominating Thomas Herbert Warren, M.A., President of Magdalen College, to be Vice-Chancellor for the ensuing year. The Vice-Chancellor having thereupon made the statutory declaration was admitted to office. The new Vice-Chancellor is well known as a strong supporter of the Natural Science School and the School of Medicine in the University.—The examinations for the degree of M.B., B.Ch., will commence on Thursday, Dec. 6th. Names must be sent in to the secretary to the Boards of Faculties on the proper forms and accompanied in each case by the required certificates not later than 10.30 A.M. on Tuesday, Nov. 20th.—The examination in Preventive Medicine for 1906 will commence on Tuesday, Nov. 20th. Names must be sent in not later than 10.30 A.M. on Tuesday, Oct. 30th, to the secretary to the Boards of Faculties, from whom all necessary information may be obtained. The examination, which is not confined to members of the University, consists of two parts. In the first of these candidates are required to exhibit a knowledge of chemistry and physics in the relations of these sciences to public health. In the second part of the examination the candidate is examined in the subjects of general hygiene and of pathology in its bearings on public health. In all the subjects the examination is partly practical. The first part of the examination occupies one day and the second part the three following days. Candidates may offer themselves for the two parts of the examination on the same occasion or on

different occasions; but their admission to the second part is contingent on their having already satisfied the examiners in the first part. In the examination statutes and regulations of the University and in the resolutions and rules of the General Medical Council full information will be found regarding the conditions which candidates must fulfil before admission to the examination. The examination statutes also contain schedules of the subjects of examination and the current time-table.

PRESENTATION TO A MEDICAL PRACTITIONER.—Mr. Charles Porter, M.D. Edin., late assistant medical officer of health of Sheffield, and now assistant medical officer of health of Leeds, was recently the recipient of an illuminated address and gold watch and chain from 104 medical men practising in the city of Sheffield.

SOCIETY OF ANÆSTHETISTS.—The annual dinner of the above society was held on Oct. 19th at the Café Monico, the President, Dr. R. J. Probyn-Williams, being in the chair. Among the guests were Mr. Henry Morris, President of the Royal College of Surgeons of England, Dr. G. E. Herman, Mr. James Berry, and other representatives of medicine and surgery and kindred societies. After the loyal toasts had been duly honoured, Dr. Dudley W. Buxton proposed the toast of "The Guests," which was responded to by Mr. Morris. An enjoyable evening was spent and the society starts its session 1906–07 under very favourable auspices.

HIGH DEATH-RATES.—In normal seasons, writes the British Consul in Ecuador, the health of the port of Guayaquil may, for a tropical city without any proper drainage, be considered as fairly good. The general death-rate ranges, in ordinary periods, between 35 and 40 per 1000 per year. At present, however, owing to a peculiar and unfavourable rainy season, and to other as yet unknown causes, the town has been experiencing an unusually severe death-rate, and it may not be an exaggeration to state that this has for some weeks been at the rate of 100 per 1000 per year. Out of a population of 70,000 there have been as many as 160 deaths in a single week (equivalent, if continued, to 8320 in a year, or 120 per 1000). A considerable amount of fever, somewhat like typhoid, has occurred throughout the country. There are infectious and pernicious fevers, much malarial fever, and the so-called epidemic yellow fever, all more or less prevalent throughout the district. The Government and municipal authorities are giving attention to the carrying out of a convenient and extensive sewage scheme for the city which may help to reduce the death-rate in the near future. In 1904 the total deaths registered in Guayaquil were 2877, as against 3232 in 1903. Of these deaths, 870 were entered as from fever, 190 of which were declared as yellow fever. The death-rate amongst children is excessive, 1267 deaths out of a total of 2877 being of children under five years of age. From 1878 to the present time nearly every year has seen a continued and steady decline in the amount of rainfall. No exact statistics are obtainable, but there is little reason to doubt that the decline within the period cited is upwards of 30 per cent.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, 41 and 43, Maddox-street, Bond-street, London, W.

The Queen's Poor: Life as They Find it in Town and Country. By M. Loane. New and Cheaper Edition. Price 3s. 6d.

BAILLIÈRE, J. B., ET FILS, 19, Rue Hautefeuille, Paris.

Nouveau Traité de Médecine et de Thérapeutique. Publié en Fascicules sous la Direction de MM. P. Brouardel et A. Gilbert. XI. Intoxications. Par P. Carnot, B. Lancereaux, Letulle, Wurtz, Professeurs agrégés à la Faculté de Médecine de Paris, Médecins des Hôpitaux. Prix, broché, Fr. 6; cartonné, Fr. 7.50.

Traité d'Hygiène. Publié en Fascicules sous la Direction de MM. P. Brouardel et E. Meany. IX. Hygiène Militaire. Par J. Rouget, Médecin-Major de 1re Classe, Professeur Agrégé au Val-de-Grace, et Ch. Dopter, Médecin-Major de 2e Classe, Professeur Agrégé au Val-de-Grace. Prix, broché, Fr. 7.50; cartonné, Fr. 9.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta street, Covent Garden, London, W.C.

Lectures on Diseases of the Lungs. By James Alexander Lindsay, M.D., F.R.C.P. Lond., M.A., Professor of Medicine, Queen's College, Belfast; Physician to the Royal Victoria Hospital, Belfast. Second edition. Enlarged and re-written. Price 10s. 6d. net.

Manual of Chemistry. By W. Simon, Ph.D., M.D., Professor of Chemistry in the College of Physicians and Surgeons of Baltimore, and in the Baltimore College of Dental Surgery. Eighth edition, thoroughly revised. Price 15s. net.

The Sigmoidoscope. A Clinical Handbook on the Examination of the Rectum and Pelvic Colon. By P. Lockhart Mummery, B.C. Cantab., F.R.C.S. Eng., Hon. Surgeon to King Edward VII. Hospital for Officers; Assistant Surgeon to St. Mark's Hospital for Fistula and Other Diseases of the Rectum. Price 3s. 6d. net.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent Garden, London, W.C. (THACKER, SPINK, AND CO., Calcutta.)

Enteric Fever in India and in Other Tropical and Sub-Tropical Regions. A Study in Epidemiology and Military Hygiene. By Ernest Roberts, M.B., D.P.H., Major, Indian Medical Service, Formerly Deputy Sanitary Commissioner, North-West Provinces; lately Statistical Officer to the Government of India in the Medical and Sanitary Departments, and Officiating Secretary to the Sanitary Commissioner with the Government of India. Price 21s. net.

CLARKE, F. W. S., AND CO., LIMITED, Criterion Press, Leicester.

Artificial Limbs for Use after Amputations and Congenital Deficiencies. By F. Gustav Ernst, Orthopædic Mechanician to the National Orthopædic Hospital, the Surgical Aid Society, &c. Price not stated.

FUNK AND WAGNALLS COMPANY, New York and London.

The Health-Care of the Baby. A Handbook for Mothers and Nurses. By Louis Fischer, M.D., author of "Infant Feeding in Health and Disease"; "A Text-book on Diseases of Infancy and Childhood"; Attending Physician to the Willard Parker and Riverside Hospitals. Price 3s.

The Influence of the Mind on the Body. By Doctor Paul Dubois, Professor in the University of Berne, Author of "The Psychic Treatment of Nervous Diseases." Translated from the Fifth French Edition by L. B. Gallatin. Price 2s.

GOVERNMENT PRINTING OFFICE, Washington.

Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Authors and Subjects. Second Series. Vol. XI. Mo-Nystrom. Price not stated.

GREEN, WILLIAM, AND SONS, Edinburgh and London.

Medical Diagnosis. A Manual of Clinical Methods for Practitioners and Students. Fifth edition, greatly enlarged and revised to date. By J. J. Graham Brown, M.D., F.R.C.P.E., F.R.S.E., Assistant Physician, Royal Infirmary of Edinburgh; and W. T. Ritchie, M.D., F.R.C.P.E., F.R.S.E., Clinical Assistant Pathologist, Royal Infirmary of Edinburgh. Price 8s. net.

HEATH, D. C., AND CO., Boston, U.S.A.

Case Teaching in Medicine. A Series of Graduated Exercises in the Differential Diagnosis, Prognosis and Treatment of Actual Cases of Disease. By Richard C. Cabot, A.B., M.D. Harvard, Instructor in Medicine in the Harvard Medical School and Physician to Out-patients at the Massachusetts General Hospital. Price not stated.

HENDERSON, W. C., AND SON, St. Andrews. (SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., London.)

Incubation; or The Cure of Disease in Pagan Temples and Christian Churches. By Mary Hamilton, M.A., Carnegie Research Scholar. Price 5s. net.

HILTON AND CO., 109, College-street, Calcutta.

A Treatise on Materia Medica and Therapeutics, including Pharmacy, Dispensing, Pharmacology and Administration of Drugs. By Rakhaldas Ghosh, L.M.S. Cal. Univ., Lecturer on Materia Medica, Calcutta Medical School. Edited by C. P. Lukis, M.D., F.R.C.S., Lieut.-Colonel, Indian Medical Service; Honorary Surgeon to H.E. the Viceroy; Principal and Professor of Medicine, Medical College of Bengal; Dean of the Faculty of Medicine of the University of Calcutta. Third edition. Price Rs.5, or 7s. 6d.

LA CLINIQUE OPHTALMOLOGIQUE, 9, Rue Buffault, Paris.

Leçons de Thérapeutique Oculaire, basées sur les Découvertes les plus Récentes. Leçons faites à la Faculté de Médecine de Paris. (Cours libre.) Par le Dr. A. Darier, Ancien Président de la Société d'Ophtalmologie de Paris, Membre de la Société française d'Ophtalmologie. Prix pour la France, Fr. 12; pour l'Etranger, Fr. 12.50. Troisième édition. Complètement remaniée.

LEWIS, H. K., 136, Gower-street, London, W.C.

Refraction of the Eye, its Diagnosis and the Correction of its Errors. With a Chapter on the Use of Prisms. By A. Stanford Morton, M.B., F.R.C.S. Eng., Surgeon to the Moorfields Ophthalmic Hospital; Ophthalmic Surgeon to the Great Northern Central and the Italian Hospitals. Seventh edition. Price 3s. 6d.

The Röntgen Rays in the Diagnosis of Diseases of the Chest. By Hugh Walsham, M.A., M.D. Cantab., F.R.C.P., Chief Assistant in the Electrical Department of St. Bartholomew's Hospital; Senior Assistant Physician to the City of London Hospital for Diseases of the Chest; and G. Harrison Orton, M.A., M.D. Cantab., Assistant in the Electrical Department of St. Bartholomew's Hospital; Medical Officer in Charge of the X-ray Department of the National Hospital for Diseases of the Heart and of the Cheyne Hospital for Sick Children. Price 6s. net.

LIBRAIRIE UNIVERSELLE, 33, Rue de Provence, Paris.

Le Malade et le Médecin. Dr. Doyen. Price Fr.3.50.

LONGMANS, GREEN, AND CO., 39, Paternoster-row, London, E.C.

Five-Figure Mathematical Tables. For School and Laboratory Purposes. By A. du Pré Denning, M.Sc. Birm., B.Sc. Lond., Ph.D. Heid. Price 2s. net.

Helouan, an Egyptian Health Resort, and How to Reach It. By H. Overton Hobson, M.D. Edin., Egyptian Government Medical Director of the Baths, Helouan; Examiner in Medicine

Egyptian Government School of Medicine, Cairo. Price 2s. 6d. net.

MALOINE, A., 25-27, Rue de l'École-de-Médecine, Paris.

Traité des Maladies du Nez. Par le Docteur A. Ménier, Ex-Interne des Hôpitaux de Paris, Ancien Chef Adjt de Clinique Chirurgicale à l'Hôtel Dieu. Introduction de M. le Professeur S. Duplay. Préface de M. le Docteur A. Castex. Price Fr.12.

MERCK, E., Darmstadt; and 16, Jewry-street, London, E.C.

E. Merck's Annual Reports. Report on the Advancements of Pharmaceutical Chemistry and Therapeutics. Volume XIX. 1905. Price not stated.

NUTT, DAVID, 57-59, Long Acre, London, W.C.

My Friend Poppity. By Augusta Thorburn. Illustrated by Alice B. Woodward. Price 2s. 6d.

REBMAN COMPANY, 1123, Broadway, New York. (REBMAN, LIMITED, 129, Shaftesbury-avenue, London, W.C.)

Atlas of Typical Operations in Surgery. By Dr. Ph. Bockenheimer and Dr. Fritz Frohse. Sixty Illustrations from Water Colours by Franz Frohse (Artist), Berlin. Adapted English Version by J. Howell Evans, M.A., M.B., M.Ch. Oxon., F.R.C.S. Eng., Demonstrator of Operative Surgery at St. George's Hospital, London. Price not stated.

Atlas of Applied (Topographical) Human Anatomy. For Students and Practitioners. By Dr. Karl von Bardeleben and Prof. Dr. Heinr. Haeckel, in Collaboration with Dr. Fritz Frohse and Professor Dr. Theodore Ziehen. Only Authorised English Adaptation from the Third German Edition. By J. Howell Evans, M.A., M.B., M.Ch. Oxon., F.R.C.S. Eng., late Senior Demonstrator of Human Anatomy at St. George's Hospital, London; Demonstrator of Operative Surgery, St. George's Hospital, London. Price not stated.

REID, ANDREW, AND CO., LIMITED, London and Newcastle-upon-Tyne.

Armstrong College, Newcastle-upon-Tyne. (In the University of Durham.) Calendar. Session 1906-1907. Price 1s.; post free, 1s. 4d.

STEINHEIL, GEORGES, 2, Rue Casimir-Delavigne, Paris.

Travaux de Chirurgie Anatomo-Clinique. Par Henri Hartmann, Professeur Agrégé à la Faculté de Médecine, Chirurgien de l'Hôpital Lariboisière. Avec la Collaboration de P. Lecène et J. Okinczyc, Anciens Internes Lauréats des Hôpitaux (Médailles d'Or). Prosecteurs à la Faculté. Troisième Série. Chirurgie de l'Intestin. Price Fr. 16.

TAYLOR AND FRANCIS, Red Lion-court, Fleet-street, London, E.C.

University of London. University College. Calendar. Session MDCCCCVI-MDCCCCVII. Price not stated.

UNIVERSITY CORRESPONDENCE COLLEGE, 32, Red Lion-square, Holborn, London, W.C. (Editorial Offices, Burlington House, Cambridge.)

The London University Guide. 1907. Containing the Regulations for Examinations to be held in 1907 and 1908. Gratis. University Correspondence College. Matriculation Directory. No. XLIV., September, 1906. With Articles on Text-books. Price 1s. net.

UNIVERSITY OF LONDON, South Kensington, London, S.W.

The Calendar for the Year 1906-1907. Vol. I. (History, Statutes, Officers, Examiners, &c.), price 5s. net. Vol. II. (Curricula, &c., for Internal Students), price 5s. net. Vol. III. (For External Students), price 2s. 6d. net.

UNWIN, T. FISHER, 1, Adelphi-terrace, London, W.C.

The Iron Gates. By Annie E. Holdsworth (Mrs. Lee-Hamilton), Author of "Joanna Traill, Spinster," "The Years that the Locust hath Eaten," &c. Price 6s.

W. B. SAUNDERS COMPANY, London and Philadelphia.

The Illustrated Medical Dictionary. By W. A. Newman Dorland, A.M., M.D., Assistant Obstetrician to the University of Pennsylvania Hospital; Editor of the American Pocket Medical Dictionary; Fellow of American Academy of Medicine. Fourth edition, revised and enlarged. Price, 19s. net.; with thumb index, 21s. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

CUNNINGHAM, H. H. B., M.D., F.R.C.S. Irel., M.R.C.S., has been appointed Ophthalmic Surgeon to the Ulster Hospital for Women and Children, Belfast.

CURTIS, H. J., B.S., M.D. Lond., F.R.C.S. Eng., has been appointed Assistant Surgeon to the Metropolitan Hospital, Kingsland-road, N.E., and Clinical Assistant to the Throat and Ear Departments of the London Hospital.

FARNCOMBE, EDGAR LEONARD, M.B., B.Ch. Oxon., has been appointed Deputy Medical Officer for the Chudleigh District by the Newton Abbot Board of Guardians.

FLEMING, ROBERT JAMES, M.B. Irel., has been appointed Medical Officer for the Central District of the Devonport Union.

JACOBSEN, G. O., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Arnesby District of the county of Leicester.

KENNEDY, J. M. P., L.R.C.S. Irel., L.K.Q.C.P. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Tullamore District of King's County.

KENSINGTON, Miss E. GLADYS, M.B., B.S. Lond., has been appointed House Surgeon to the Royal Free Hospital.

KLUMPP, ERNEST GEORGE, M.B., B.S. Durh., has been appointed Medical Officer of Health for the Cricklade and Wootton Bassett (Wiltshire) Rural District Council.

LATHAM, HENRY, M.B. Edin., C.M., B.Sc. (Public Health), has been appointed Physician to the Peterborough Infirmary.

LEDINGHAM, ALEX., M.D., D.P.H. Aberd., has been appointed Medical Officer of Health of the County of Banff.

MCCASKIE, H. B., M.B. Cantab., M.R.C.S., L.R.C.P. Lond., has been appointed Clinical Assistant to the Chelsea Hospital for Women.

MENCE, W. C., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Perranporth District of the county of Cornwall.

ROSS, J. MURRAY, M.B., B.S. Durh., has been appointed Clinical Assistant to the Chelsea Hospital for Women.

SCOTT, GRAHAM, M.R.C.S., L.R.C.P. Lond., has been re-appointed Anæsthetist to the Children's Hospital, Great Ormond-street, and to the Royal Dental and Central London Throat Hospitals.

WALTERS, H. P., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Chudleigh District by the Newton Abbot (Devon) Board of Guardians.

WEAR, ALGERNON, M.D., B.S. Durh., has been appointed Honorary Medical Officer in charge of medical cases at the Southern Branch of the Leeds Public Dispensary.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ARMY MEDICAL SERVICE.—Examination for not less than 30 Commissions.

BARNSLEY, BECKETT HOSPITAL.—House Surgeon. Salary £100.

BARNSTAPLE, NORTH DEVON INFIRMARY. House Surgeon. Salary £100 per annum, with board, residence, and washing.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Assistant Physician. Also Senior and Junior Resident Medical Officers the former for six months and the latter for seven months. Honorarium at rate of £20 and £10 a year respectively, with board and lodging.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street. House Surgeon. Salary at rate of £70 per annum.

BIRMINGHAM, ASTON UNION WORKHOUSE AND COTTAGE HOMES, Gravelly Hill.—Assistant Medical Officer. Salary £140 per annum, with apartments rations, and washing.

BIRKENHEAD BOROUGH HOSPITAL.—Junior Resident House Surgeon. Salary £80 and fees.

BODMIN, CORNWALL COUNTY ASYLUM.—Second Assistant Medical Officer, unmarried. Salary £150 per annum, increasing to £180, with board, apartments, washing, &c.

BOOTLE WORKHOUSE, Cumberland.—Medical Officer. Salary £30 a year and fees.

BRADFORD ROYAL INFIRMARY.—House Physician. Also House Surgeon, unmarried. Salary in each case £100 per annum, with board and residence.

BUXTON, DEVONSHIRE HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £70 per annum, with apartments, board, and laundry.

CANCER HOSPITAL, Fulham-road, S.W.—Surgical Registrar. Honorarium £26 5s per annum.

CHEDDLETON, LEEK, STAFFORDSHIRE COUNTY ASYLUM.—Junior Assistant Medical Officer. Salary £150, rising to £200, with board, quarters, and washing.

CLAYTON HOSPITAL AND WAKEFIELD GENERAL DISPENSARY.—Senior House Surgeon, unmarried. Salary £120 per annum, with board, lodging, and washing.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Senior House Surgeon. Salary £100 per annum, with rooms, board, washing, and attendance. Also Junior House Surgeon for six months. Salary £60 per annum, with rooms, board, washing, and attendance. Also Honorary Ophthalmic Surgeon.

ECCLES AND PATRICROFT HOSPITAL.—House Surgeon, unmarried. Salary £70 per year, with board, residence, and washing.

ENNISKILLEN, FERMANAGH COUNTY HOSPITAL.—House Surgeon. Salary £52 per annum.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark.—House Physician and House Surgeon. Salary £80 respectively, with board, residence, and washing. Also Assistant House Surgeon. Salary £70, with board, residence, and washing.

GRIMSBY, COUNTY BOROUGH OF.—Medical Officer of Health. Salary £500 per annum.

GUY'S HOSPITAL.—Lecturer on Hygiene and Public Health.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Assistant Physician.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, unmarried, for six months. Salary £30, with board and residence.

HULL ROYAL INFIRMARY.—Casualty House Surgeon. Salary £50, with board and lodging.

KING'S COLLEGE, London.—Demonstrator of Physiology. Salary £75.

LANARK, MIDDLE WARD ISOLATION HOSPITAL.—Resident Physician. Salary £140 per annum, with board, &c.

LEEDS PUBLIC DISPENSARY.—Honorary Pathologist. Also Honorary Dentist.

LINCOLN COUNTY HOSPITAL.—Senior House Surgeon, unmarried. Salary £125 per annum, with board, lodging, and washing.

MACCLESFIELD, PARKSIDE ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £140, rising to £160, with apartments, board, and washing.

MAIDSTONE, WEST KENT GENERAL HOSPITAL.—Assistant House Surgeon and Anæsthetist, unmarried. Salary £60, with board, residence, and washing.

MANCHESTER, ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—Medical Officer. Salary £60 per annum, with board and residence.

MEDICAL DEPARTMENT OF THE ROYAL NAVY.—Examination for not more than Six Commissions.

NEWCASTLE-ON-TYNE DISPENSARY.—Visiting Medical Assistant. Salary £160.

NOTTINGHAM, CITY ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with apartments, board, &c.

NOTTINGHAM GENERAL DISPENSARY, Hyson Green.—Senior Resident Surgeon, unmarried. Salary £180 per annum, with apartments, attendance light, &c.

PADDINGTON WORKHOUSE.—First Assistant to the Medical Superintendent and Assistant Medical Officer of the Workhouse, unmarried. Salary £120 per annum, rising to £150, with board, lodging, washing, and uniform.

QUEEN'S CHARLOTTE'S LYING IN HOSPITAL, Marylebone-road, N.W.—Resident Medical Officer for Out-patient Department for four months. Salary at rate of £60 per annum, with board, residence, and washing.

ROCHESTER, ST. BARTHOLOMEW'S HOSPITAL.—House Surgeon and House Physician. Salary in each case £110, with board and residence.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—Superintendent of the Laboratory.

ROYAL HALIFAX INFIRMARY.—Third House Surgeon, unmarried. Salary £80 per annum, with residence board, and washing.

ST. GEORGE'S UNION INFIRMARY, Fulham-road, West Brompton, S.W.—Second Assistant Medical Officer. Salary £120 per annum, with board, residence, and washing.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta street, Covent Garden, W.C.—Junior House Surgeon for six months. Salary at rate of £20 a year, with board, lodging, and washing.

STOCKPORT, STEPPING HILL HOSPITAL.—Resident Assistant Medical Officer. Salary £130 per annum, rising to £150, with apartments, rations, &c.

SUNDERLAND INFIRMARY.—House Physician and Pathologist. Salary £80 per annum, with board, residence, and washing.

THROAT HOSPITAL, Golden-square, W.—Anæsthetist. Also Senior Clinical Assistant.

WESTERN GENERAL DISPENSARY, Marylebone-road, N.W.—Honorary Surgeon.

WANDSWORTH UNION INFIRMARY, St. John's hill, Clapham Junction. Junior Assistant Medical Officer, unmarried. Salary at rate of £100 a year, with board, lodging, and washing.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Physician. Salary £100 per annum, with board, lodging, and laundry. Also Assistant House Surgeon. Salary at rate of £75 per annum, with board, lodging, and laundry.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Acts at Gateshead, in the county of Durham, at Histon, in the county of Cambridge, and at Babbriggan, in the county of Dublin.

Births, Marriages, and Deaths.

BIRTHS.

HENRY.—On Oct. 18th, at Tresco, Kennington-road, S.E., the wife of G. Nicol Henry, M.B., C.M., of a son.

MADDEN.—On the 8th inst., at Cairo, the wife of Frank Cole Madden, M.D., F.R.C.S., of a son.

WILSON.—At Denham House, Goldhawk-road, London, W., on the 16th inst., the wife of James Wilson, M.D., of a son.

MARRIAGES.

GRIFFITH-PROSSER.—On 18th Oct., at Merthyr Tydvil parish church, by the Rev. D. Lewis, Rector, John Griffith, M.R.C.S., L.R.C.P. (London), son of R. C. Griffith, Brynsiencyn, Anglesey (late of Port Dinorwic), to Annie Prosser, daughter of David Prosser, Thornwood, Treharris.

MITCHELL—STEPHEN.—On Oct. 20th, at St. Mary Abbots, Kensington, Alexander Mitchell, M.B., C.M., of Old Aberdeen, to Marion Louisa, daughter of the late Lewel Stephen, Advocate, Aberdeen.

ROGERS—BLAIR.—On Oct. 20th, at King's Weigh House Church, Norman Cumming Rogers, M.B., Ch.B., and Grace Brown (Daisie), youngest daughter of the late G. MacLellan Blair, J.P., Glasgow, and of Mrs. G. MacLellan Blair.

DEATHS.

CHEYNE.—On Oct. 17th, at Colby-road Upper Norwood, William Romley Cheyne, M.R.C.S., aged 58 years.

CRADDOCK.—On Oct. 14th, at Wotton, Frederick Hurst Craddock, M.A., M.R.C.S., aged 55 years.

CRESWELL.—On the 19th inst., suddenly, of cerebral apoplexy, Joseph Nash Creswell, Solicitor, of Edmall House, Bromsgrove, only brother of John C. Creswell, Surgeon, of Barnsley House, Billericay, Essex.

DRUMMOND.—On October 20th, at his residence, Kinderheim, St. Anne's-on-Sea, Lancs, Edward Drummond, M.D. Edin., M.R.C.S. Eng., D.P.H. Camb. (formerly physician at Rome), in his 64th year.

MACLEAN.—On Oct. 19th, at Widcombe crescent, Bath, John Lindsay Maclean, M.D., aged 75 years.

PITT.—On Oct. 21st, at Wellesbourne, near Warwick, Mary, wife of Richard Joseph Pitt, L.F.P.S.G., and L.S.A.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

FATALITIES IN SEWERS.

AT the Hackney coroner's court on Oct. 17th Dr. W. Wynn Westcott held an inquiry into the circumstances of the death of a man, aged 40 years, who was engaged in clearing the sewers of the Poplar borough council at Hackney Wick. It appeared that having removed the manhole he found that a lighted candle on being lowered was extinguished. About an hour later, without again testing the air in the sewer, he descended; his mate not hearing him at work, taking a rope, went down after him but being nearly overcome with the sewer-gases he tied the rope round himself and asked to be pulled up. He reached the surface in an unconscious condition. A full hour elapsed before the dead body of the first man was recovered; he was found lying face downwards in over two feet of water, some of which he had swallowed. Artificial respiration did not restore him. It appeared from the medical evidence that the deceased, having been overcome, fainted, fell forward, and was drowned. Dr. Wynn Westcott was supported by the jury in expressing the opinion that sewermen should be carefully instructed as to the dangers of their occupation, the means of preventing fatalities such as the above, and the methods which should be adopted in resuscitating those so overpowered and suffocated. Thus they should never work single-handed and should always have a rope in readiness; manholes should be opened long before the sewerman descends and immediately precedent to the descent the atmosphere of the sewer should be tested with a lighted candle or otherwise; rules of first aid should from time to time be expounded to the men. In our opinion men subject to fits or suffering from affections of the lungs should be forbidden to undertake this class of work; it is said that bronchitis and gout are common among sewermen. In addition to the gases of putrefaction generated wherever sewage is stagnant considerable volumes of irritant gases enter sewers from the routine drain-testing of the sanitary inspector. It would be well if the local medical officer of health gave instructions to the sewermen and so periodically brought to their notice the danger which is constantly present, but to which, as in most similar cases, the workmen become indifferent.

PRACTICE IN THE ARGENTINE.

To the Editors of THE LANCET.

SIRS,—Some weeks ago you were good enough to refer me to the Consul-General of the Argentine Republic for information as to the prospects of English medical men in that country. I cannot say that I obtained much information. I have since, however, had the following particulars sent me by an English medical man long resident in Buenos Ayres and one of the leading men there. I quote it without vouching for its accuracy and for publication if you wish.

I am, Sirs, yours faithfully,

Oct. 15th, 1906. X.

[COPY.]

Sept. 14th, 1906.

DEAR ——,—It is with regret that I cannot give you a glowing account of the prospects of an English doctor in this country.

Appointments open to Englishmen there are very few and far between. Here we have no locum tenencies, no public health appointments for foreigners, and there are no assistantships to be got. In this country we have all to paddle our own canoe. Still any really capable man with a knowledge of Spanish, after doing the necessary examinations to make valid his diploma, can do well and many have done well. Here we have a course of six years' medical college; a foreigner if well prepared might get through the necessary examinations in three years (in the language of the country).

The studies are difficult and of a high standard.

Yours sincerely,

A QUESTION OF HOSPITAL ETHICS.

To the Editors of THE LANCET.

SIRS,—Some of your readers may like to express an opinion on the following proposal:—A is a member of the honorary staff of a hospital where there is no medical school. A is also the superintendent of the electrical and x ray department of this hospital and is an expert in the use of x ray and electrical treatment. In this department some patients who can afford to pay a small fee are treated as well as those unable to pay, and a certain amount of income is earned for the hospital thereby. A wishes to hold classes of instruction at the hospital for medical men in x ray and electrical work, using the hospital apparatus for such classes, and proposes that after deducting all expenses incurred by the hospital in connexion with the classes, the balance of the fees received shall go to him.

An expression of opinion is invited on the ethics of this proposal: 1. Assuming that the patients of the hospital are used for illustrating and demonstrating. 2. Assuming that the patients are not used for illustrating and demonstrating. 3. Should the fees go to the hospital?

I am, Sirs, yours faithfully,

QUERY.

A QUESTION OF FEES.

To the Editors of THE LANCET.

SIRS,—A was in attendance on a lady who was suffering from cardiac dropsy. The case was a very trying one, as the patient was heavy to lift. As a result, one of the nurses had to be sent home on account of illness (pain in the left side from moveable kidney). A asked the lady who was staying in the house and who was supposed to be in authority and a relative of the patient whether he (A) should attend the nurse at her home (some distance off) or should the nurse call in her own doctor. The lady replied that she was quite sure the patient would wish that everything possible should be done for the nurse and that A should attend her, which A did. During this prolonged attendance two other nurses got laid up through the heavy lifting (one vomited blood, the other through fatigue) and A was requested by the lady to attend them also. The patient was not in either of the cases asked, as both the lady and A considered her condition too serious. The patient died and on A sending in his account (which was a large one) the executors declined to pay for the attendance on the nurses. Would A be justified in demanding his fees in this case?

I am, Sirs, yours faithfully,

Oct. 21st, 1906. R. M.

*** The liability rests entirely on the question of the authority of the lady friend to give the direction. This can only be dealt with by careful inquiry to be made by the legal adviser of our correspondent. If the lady can be proved to be the agent of the patient well and good. If not our correspondent can only claim against the nurses.—ED. L.

REPORT ON THE ADVANCEMENTS OF PHARMACEUTICAL CHEMISTRY AND THERAPEUTICS.

UNDER the above heading a copy of Vol. XIX. of the complete series of E. Merck's annual reports has reached us from the London office, London House, 16, Jewry-street, E.C. We have on previous occasions remarked the excellence and value of former numbers, and the present volume is equally deserving of this encomium. This series of reports is, in fact, a very valuable channel of information on recent pharmacology and therapeutics to the practitioner, who can possess himself of a copy gratis by applying to the above address.

A TWO-WAY PERITONEAL IRRIGATOR.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of August 11th Mr. H. M. W. Gray has described "a two-way peritoneal irrigator." Probably many similar devices have been recorded. In the *Medical Annual* of 1902, also in the *British Medical Journal* of Sept. 24th, 1904, p. 760, is an account of an instrument for a similar purpose which I devised under the name of "an evacuator for removal of fluids from cavities."

My instrument terminates in a metal spherical bulb in which are many perforations. This smooth bulb must be much easier to manipulate, especially while being moved from side to side within the abdomen, than the egg-whisk extremity of Mr. Gray's instrument, into which, as Mr. Gray admits, intestine or omentum may be drawn by suction. In my instrument the fluid enters the bulb through the perforations and is sucked up through the tube which reaches to the bottom of the interior of the bulb, the end of this tube lying in the pool of fluid at the bottom of the bulb.

A second tube connects the cavity of the bulb with the outer air, thereby tending to obviate a negative pressure within the bulb, which might lead to the sucking into the bulb of tags of omentum. The contents of the bulb are evacuated by means of a reversed enema syringe attached to the first tube. The evacuator can also be used as the nozzle of an irrigator. In practice the instrument works well, as, for instance, in a large abdominal abscess, a pint of pus being evacuated in a few minutes. I am, Sirs, yours faithfully,

C. HAMILTON WHITEFORD.

Plymouth, Oct. 22nd, 1906.

STAMMERING.

To the Editors of THE LANCET.

SIRS,—Would you give me information on what is good in the literature of stammering and its treatment?

I am, Sirs, yours faithfully,

INEFFABLE.

*** If our correspondent will refer to a paper, "Stammering and Its Treatment," by Dr. R. Worthington, which appeared in THE LANCET of Sept. 22nd, p. 789, he will find mention made of many books and papers dealing with the subject. He might also consult a lecture by Dr. W. S. Colman on "Stuttering," which was published in THE LANCET of July 14th, p. 70.—ED. L.

Aitchess.—In answer to our correspondent's query marked A, the general rule is that persons brought to a hospital dead are not reckoned as patients of the hospital and the house surgeon can claim a fee for giving evidence and for making a post-mortem examination, provided that such post-mortem examination is ordered by the coroner. With regard to question B, the general rule as to the taking of fees by a locum-tenent is that all fees received on behalf of his principal by a locum-tenent belong to the principal, but in many cases the matter is settled in one way or the other by a special arrangement between the medical man and his locum-tenent.

E. L.—There has been no correspondence upon the subject. The depilatory in question, which is either barium or calcium sulphide, has, of course, no effect upon the hair follicles and simply removes the hair outside the skin. With the precautions which we mentioned before it is quite suitable for the purpose stated by our correspondent, but its effects are not lasting.

M.R.C.S., L.R.C.P.—Our correspondent, who writes about the status of the medical profession, has omitted to furnish us with his name and address. Will he kindly repair the omission?

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (29th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond street (3 P.M.).

TUESDAY (30th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (2 P.M., Ophthalmic, 2.15 P.M.).

WEDNESDAY (31st).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9.30 A.M., Dental, 2 P.M.).

THURSDAY (1st).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (2.30 P.M.).

FRIDAY (2nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), St. Mark's (2.30 P.M.).

SATURDAY (3rd).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

TUESDAY (30th).—THERAPEUTICAL SOCIETY (Apothecaries' Hall, Blackfriars, E.C.).—4.30 P.M.: Election of Officers. Papers:—Mr. H. W. Gadd: Some Further Researches upon the Active Principles of Viola Odorata.—Dr. W. A. Potts: The Therapeutical Uses of Preparations of Viola Odorata.

WEDNESDAY (31st).—BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY (20, Hanover-square, W.).—5.30 P.M.: General Meeting to Discuss the Report of the Delegates concerning the Proposed Amalgamation of Medical Societies. 6 P.M.: Ordinary Meeting. Address:—Mr. H. Shirley-Jones (Droitwich) (President): The Art of Medicine in Ancient Egypt.

THURSDAY (1st).—NORTH-EAST LONDON CLINICAL SOCIETY (Tottenham Hospital, N.).—4 P.M.: Clinical Cases.

NEUROLOGICAL SOCIETY OF THE UNITED KINGDOM (11, Chandos-street, Cavendish-square, W.).—9 P.M.: Address:—Sir Thomas Barlow, Bart.: Remarks on Some of the Nervous Complications of Specific Fevers.

FRIDAY (2nd).—WEST KENT MEDICO-CHIRURGICAL SOCIETY (Royal Kent Dispensary, Greenwich-road, S.E.).—8.45 P.M.: Paper:—Dr. A. S. Giles: Some Observations on Uterine Fibroids.

SOCIETY OF ANÆSTHETISTS (20, Hanover-square, W.).—Paper:—Dr. Silk: Anæsthesia in Abnormal and Constrained Positions.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—Clinical Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (29th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith road, W.).—12 noon: Pathological Demonstration. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: X Rays. Operations. Diseases of the Eye. 5 P.M.: Lecture:—Clinical Cases.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. W. Fox: Clinique. (Skin.) 5.15 P.M.: Lecture:—Dr. F. J. McCann: The Diagnosis of Pregnancy.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Sir D. Duckworth: Medicine. 3.15 P.M.: Mr. W. Turner: Surgery. 4 P.M.: Dr. StClair Thomson: Throat and Ear. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat.

TUESDAY (30th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M.: Medical and Surgical Clinics. Diseases of the Throat, Nose, and Ear. 2.30 P.M.: X Rays. Operations. Diseases of the Skin. 5 P.M.: Lecture:—Bilharzial Disease.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. W. Ewart: Clinique. (Medical.) 5.15 P.M.: Lecture:—Dr. C. Mercier: Certifiability.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. T. Hewlett: Medicine. 3.15 P.M.: Mr. Carless: Surgery. 4 P.M.: Mr. M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Sir W. Gowers.

CHARING CROSS HOSPITAL.—4 P.M.: Mr. Wallis: Demonstration (Surgical). (Post-Graduate Course.)

CENTRAL LONDON OPHTHALMIC HOSPITAL (Gray's Inn-road, W.C.).—5 P.M.: Mr. Wells and Mr. Maclehose: Classes of Instruction in the Use of the Ophthalmoscope, with Demonstrations of Cases.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—4.30 P.M.: Lecture-Demonstration:—Mr. A. de Prenderville: On the Administaation of Anæsthetics.

WEDNESDAY (31st).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Diseases of the Throat, Nose, and Ear. Diseases of Children. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: X Rays. Operations. 5 P.M.: Lecture:—Practical Medicine.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. P. Paton: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Dr. G. A. Sutherland: The Treatment of Rickets.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. Wells: Medicine. 3.15 P.M.: Mr. M. Robson: Surgery. 4 P.M.: Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye.

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M.: Demonstration:—Mr. C. Nourse: Larynx.

THURSDAY (1st).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: X Rays. Operations. Diseases of the Eye. 5 P.M.: Lecture:—Practical Surgery.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Dr. C. O. Hawthorne: The Field of Vision in Health and Disease.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. G. Rankin: Medicine. 3.15 P.M.: Sir W. Bennett: Surgery. 4 P.M.: Mr. M. Davidson: Radiography. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat.

CHARING CROSS HOSPITAL.—4 P.M.: Demonstration:—Dr. I. Bruce: (Electrical). (Post-Graduate Course.)

CENTRAL LONDON OPHTHALMIC HOSPITAL (Gray's Inn-road, W.C.).—8 P.M.: Lecture Demonstration:—Dr. C. O. Hawthorne: Medical Ophthalmology.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN (Leicester-square, W.C.).—6 P.M.: Chesterfield Lecture:—Dr. M. Dockrell: Seborrhœa and Psoriasis dealt with as Stages of the same Dermatitis in Symptoms, Diagnosis, and Treatment.

WEST END HOSPITAL FOR NERVOUS DISEASES (Welbeck-street, W.).—5 P.M.: Lecture:—Dr. H. Campbell: Demonstration of Cases.

SAMARITAN FREE HOSPITAL FOR WOMEN (Marylebone-road, N.W.).—3 P.M.: Lecture:—Dr. Bell: The Diagnosis and Treatment of Ectopic Gestation.

FRIDAY (2nd).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M.: Medical and Surgical Clinics. Diseases of the Throat, Nose, and Ear. 2.30 P.M.: X Rays. Operations. Diseases of the Skin. 5 P.M.: Lecture:—Some Aspects of the Treatment of Surgery.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. H. Tilley. Clinique. (Throat.)

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. Bradford: Medicine. 3.15 P.M.: Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Dr. J. Taylor: Ophthalmoplegia in Nervous Diseases.

SATURDAY (3rd).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Diseases of the Throat, Nose, and Ear. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: X Rays. Operations.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Oct. 25th, 1906.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rain-fall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Oct. 19	29·70	W.	...	89	57	45	45	47	Cloudy
,, 20	29·89	S.W.	...	90	59	45	46	47	Fine
,, 21	29·92	S.	...	84	66	47	57	60	Cloudy
,, 22	29·90	S.W.	...	81	68	54	59	61	Fine
,, 23	30·02	W.	0·02	75	64	57	56	58	Cloudy
,, 24	30·12	S.W.	...	74	63	54	55	57	Cloudy
,, 25	30·35	NNW	...	84	55	47	47	49	Fine

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